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SCHOOL LUNCH DESIGN CRITERIA, 1965.

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IN ORDER TO SERVE AS A GUIDE FOR ARCHITECTS, COUNTY SUPERINTENDENTS, AND SCHOOL LUNCH SUPERVISORS, THIS REPORT SPECIFIES CRITERIA FOR SCHOOL LUNCH PROGRAMS. AREAS DISCUSSED INCLUDE--(1) SELECTION, PROCUREMENT, AND INSTALLATION OF EQUIPMENT WITH RESPECT TO THE NUMBER OF MEALS TO BE SERVED, (2) REQUIREMENTS FOR FUTURE EXPANSION, (3) SANITATION AND SAFETY, AND (4) FACILITIES AND REQUIREMENTS FOR DINING ROOMS, KITCHENS, SERVING AREAS, DISH WASHING AREAS, AND STOREROOMS. (JT)

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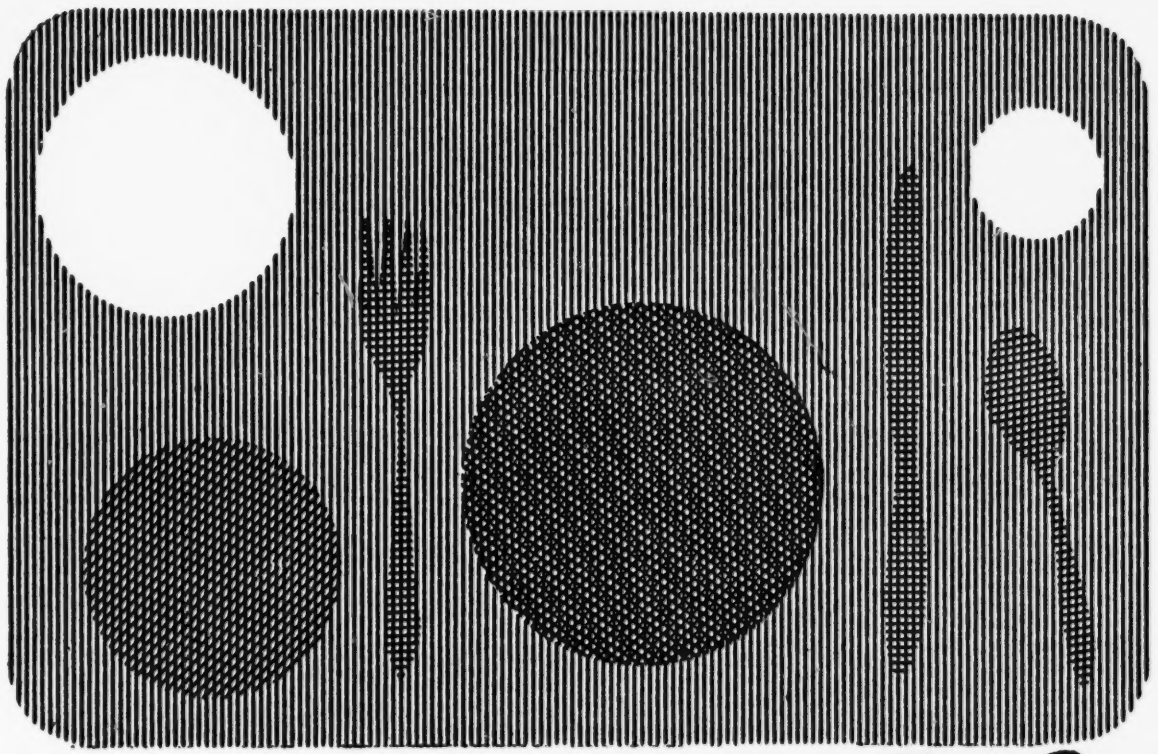


1965

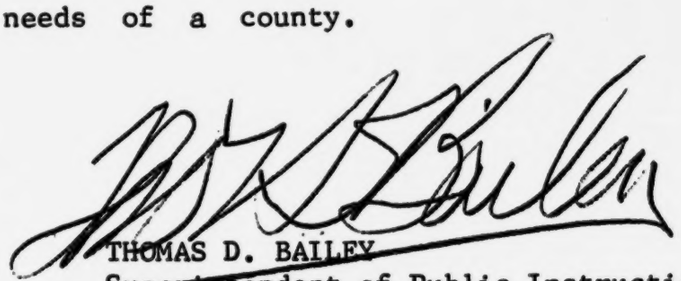
SCHOOL LUNCH DESIGN CRITERIA

STATE DEPARTMENT OF EDUCATION
TALLAHASSEE, FLORIDA

THOMAS D. BAILEY, SUPERINTENDENT

F O R E W O R D

This bulletin is the result of the thoughts and ideas of many people. It is intended as a guide to architects, county superintendents, and school lunch supervisors having the responsibility for planning school lunch facilities. It might attain its greatest usefulness by adapting it to the specific needs of a county.



THOMAS D. BAILEY
Superintendent of Public Instruction

TABLE OF CONTENTS

	Page
GENERAL AUTHORITY	1
EDUCATIONAL SPECIFICATIONS	1
EDUCATIONAL PROGRAM OF SCHOOL LUNCH	2
TYPE OF FOOD SERVICE	2
RESPONSIBILITIES OF THE COUNTY SCHOOL LUNCH SUPERVISOR	2
LOCATION	3
FUNCTIONAL SEQUENCE	3
SELECTION, PROCUREMENT AND INSTALLATION OF EQUIPMENT	4
Quality	4
Service Available	4
Established Standards	4
Standardization Within a County	4
Use of Brand Names in Competitive Bids	4
Equipment Included in the Construction Contract	5
Equipment Items Purchased Directly by the County	5
FUTURE EXPANSION	5
GENERAL SPACE REQUIREMENTS FOR SCHOOL LUNCH PURPOSES	6
DINING ROOM	7
Visual Environment	7
Size	7
Space for Books	7
Dining Room Finishes	7
Acoustical Control	8
Dish Return	8
Dish Return Variations	8
Conveyor belt	8
"Walk-off" dish return	9
Remote dishwashing area	10
Two dish return windows	10
Drinking Fountain	10
Display Area	10
Doors and Windows	11
Multi - Function	11
Lighting and Power Requirements	11
SERVING AREA	11
Finish	11
Number of Serving Counters	11
Serving Counter Order	12
Serving Counter Variations	13
Tray Unit	14
Silver	14
Hot Items	15
Cold Items	15
Milk Box	15
Cashier Section	15
Tray Rail	15
Counter Guards	15
Dish Storage	17
Supplies and Food Replenishments	17

KITCHEN ---------- 17
Size ---------- 17
Number of Employees ---------- 17
Sequence of Operation ---------- 18
Kitchen Finishes ---------- 18
Equipment Placement ---------- 18
Modular Co-ordination of Equipment ---------- 20
Aisle Allowances ---------- 20
Walk-in Refrigerators ---------- 21
Steam Equipment ---------- 22
Cooking Fuel ---------- 22
Mobile Equipment ---------- 22
Vertical Storage ---------- 23
Use of Partially Prepared Food ---------- 23
Pot Washing Arrangement ---------- 23
Air Conditioning and Ventilation ---------- 25
Under shelf ventilator ---------- 25
Overhead canopy or hood ---------- 26
Plumbing ---------- 26
Lighting and Wiring ---------- 27
Finish ---------- 27
Doors ---------- 27
Bulletin Board ---------- 27
DISHWASHING AREA ---------- 28
Scrap Holes ---------- 28
Pre-Rinse Arrangement ---------- 28
Mechanically Operated Pre-Wash ---------- 28
Disposal Unit ---------- 28
Pre-Rinse Sink ---------- 28
Dish Machines ---------- 30
Rinse Injector ---------- 30
Ventilation ---------- 30
HOT WATER SUPPLY ---------- 30
OFFICE AREA ---------- 31
STORE ROOM ---------- 31
Shelves ---------- 32
Storage Containers ---------- 33
Storage Racks or Skids ---------- 33
Ventilation ---------- 33
Security ---------- 33
EMPLOYEES LOUNGE ---------- 33
STORAGE SPACE FOR CLEANING SUPPLIES ---------- 34
RECEIVING AREA ---------- 34
LOADING PLATFORM ---------- 34
REFUSE AREA ---------- 34
CENTRAL KITCHENS ---------- 34
Advantages ---------- 34
Disadvantages ---------- 36
Building Adaptations ---------- 36
SATELLITE SCHOOLS ---------- 36
CLASSROOM SERVICE ---------- 37
JUNIOR COLLEGES ---------- 37
Dining Area ---------- 37
Kitchen ---------- 37

Serving Area ---------- 37
Snack Bar ---------- 37
SPECIAL USES ---------- 38
Emergency Feeding ---------- 38
Head Start, Day Camps, Summer Enrichment ---------- 38
Vocational Education ---------- 38
RECOMMENDED ADDITIONAL READING ---------- 38
APPENDIX
Equipment Recommendations and Approximate Sizes ---------- 39
Summary of Mechanical Services for School Lunch Equipment ---- 47
Dishwashing and Hot Water Requirements ---------- 48
Sanitation Check List ---------- 49
Safety Check List ---------- 50
Space Environment and Equipment for School Lunch Purposes ---- 51
1/4" Scale Plan View Template of Kitchen Equipment ----------

LIST OF ILLUSTRATIONS

FLOW CHART ---------- 3
DISH RETURN, SINK AND COUNTER DETAILS ---------- 9
TWO DISH RETURN WINDOWS ---------- 10
SERVING COUNTER ARRANGEMENT ---------- 12
SERVING COUNTER VARIATIONS ---------- 13
TRAY CART ---------- 14
SERVING COUNTER WITH SNEEZE GUARD ---------- 16
DISH TRUCK ---------- 16
COOK'S TABLE ---------- 19
WALK-IN REFRIGERATOR - SECTION THRU DOOR ---------- 21
POT SINK ARRANGEMENT ---------- 24
VENTILATION - HOOD AND UNDER SHELF TYPES ---------- 25
OVERHEAD HOOD (Elevation) ---------- 26
FOOD WASTE DISPOSER ---------- 29
PRE-RINSE ARRANGEMENT ---------- 29
STOREROOM SHELVING ---------- 32
CAN WASH DETAILS ---------- 35

GENERAL AUTHORITY

Florida Statutes provide that "The state board shall adopt and prescribe all needful rules and regulations for the proper enforcement and carrying out of the provisions of the school code."[1] On this authority "school lunch facilities should be planned to conform to accepted standards as outlined in 'School Lunch Design Criteria' published by the state department of education."[2]

School lunch facilities are also subject to the requirements of the Sanitary Code of Florida to which frequent reference is made in this bulletin.

EDUCATIONAL SPECIFICATIONS

Building construction should be preceded by some basic agreements between the architect and the administrative, instructional and school lunch personnel. Outside consultants, lay people and students might also be included in this process. These common understandings in written form stimulate better design and constitute the educational specifications.

Properly prepared, the educational specifications will include the following information:

- Statement of philosophy.
- General objectives of the program.
- Projected enrollment based on current survey information.
- Type of service.
- Functions to be performed.
- Space and equipment necessary to perform these functions.
- Any anticipated future changes.
- Special considerations such as utilities and materials.
- Relationship of functional divisions of space.
- Planning and construction schedule.

Each school lunch department then should be considered a unique situation. The information in this bulletin may attain its greatest usefulness by adapting it to the needs of the individual program.

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[1]Florida School Laws 229.07 (2)
[2]State Board of Education Regulations 130-7.47.

EDUCATIONAL PROGRAM OF SCHOOL LUNCH

School lunch learning opportunities extend beyond the physical benefits of the actual consumption of food. These learning opportunities are provided in such ways as nutrition education, the practice of acceptable social behavior, suitable conversation, respect for others, self-reliance, cleanliness, broader eating habits and the expression of gratitude.

In addition to special learnings, personality influences and attitudes, the school lunch department is used to supplement classroom teaching of subject matter.

The educational possibilities should be taken into consideration in making new buildings functional, physically comfortable and aesthetically inviting.

TYPE OF FOOD SERVICE

The prevailing meal pattern in Florida is a complete lunch consisting of a protein rich food, vegetable, or fruit or both, bread and butter, and milk as a beverage. This practice is essential if we are going to safeguard nutritional adequacy. Some schools provide a limited choice within the above framework. Choice is especially desirable in junior and senior high schools. Counter service is the general procedure.

RESPONSIBILITIES OF THE COUNTY SCHOOL LUNCH SUPERVISOR

County school lunch supervisors should perform the following functions relating to planning and equipping school lunch departments:

- Make suggestions for school lunch facilities, pertinent to a county building survey, prior to the arrival of the survey team.
- Collaborate in writing educational specifications.
- Review and approve preliminary plans.
- Furnish dimensions and roughing-in information for all kitchen equipment. This may be in the form of a brochure showing illustrations or diagrams of items which require plumbing, electrical or gas connections. This information should be available to the architect prior to the preparation of preliminary drawings.
- Thoroughly review working drawings and specifications.
- During construction confer with the county director of school planning or the architect for any necessary changes.
- Check the equipment for condition and function.
- Instruct employees in the use and care of the equipment and building.

Some counties do not have a county school lunch supervisor in which case a school lunch supervisor from a nearby county may be used as a consultant. Technical help may also be requested from the school lunch staff, State Department of Education.

LOCATION

The dining space and related areas should have a ground floor location with consideration given to immediate accessibility for public use without opening the entire school plant.

A ground level entrance enables use by physically handicapped students on crutches or in wheel chairs.

School lunch facilities should be located as remote from the "quiet" academic areas as practical. Service access for delivery and pick-up should be combined only with other service functions.

FUNCTIONAL SEQUENCE

School lunch facilities should be planned to provide for the natural flow of raw and prepared material. This should be accomplished with minimum confusion and crossing of paths. There are several processes involved. The following flow chart illustrates the relationship of the different areas. In addition, provisions are necessary for dishwashing, housekeeping, management, and the comfort and convenience of employees.

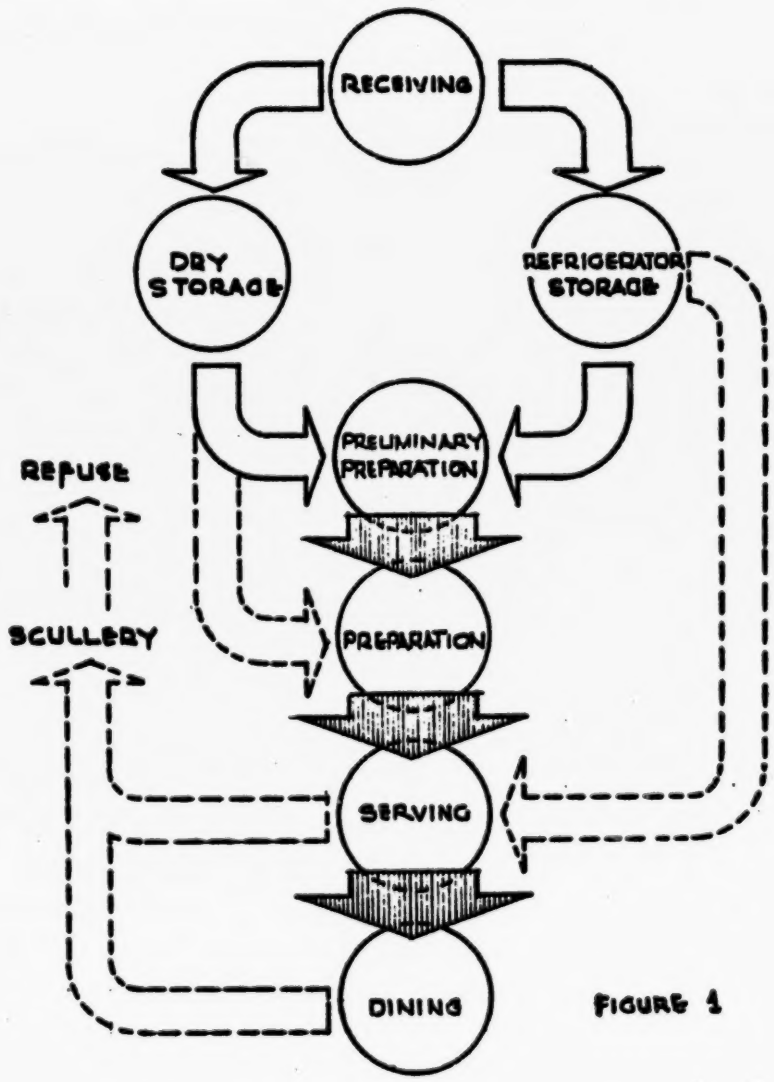

FIGURE 1

SELECTION, PROCUREMENT AND INSTALLATION OF EQUIPMENT

The selection of equipment is subject to many considerations such as quality, capacity, durability, performance, availability of maintenance service and construction in compliance with sanitary standards.

Quality - cheap equipment becomes expensive through rapid deterioration. Stainless steel should be used for sinks, counter tops, work tables, soiled and clean dish tables. For these purposes 14 or 16 gauge, #4 finish, 18-8 or type 302 stainless steel is recommended. It will normally last the lifetime of the building and will reduce labor cost. This complies with the Sanitary Code of Florida[3]:

> "New and replacement equipment and multi-use utensils shall be of such material, workmanship and design as to be smooth, easily cleanable, resistant to wear, denting, buckling, pitting, chipping and brazing. Such equipment and utensils shall be capable of withstanding scrubbing, scouring, repeated corrosive action of cleaning compounds and other normal conditions of operation."

Service Available - repair and maintenance service available on mechanical equipment may determine its acceptability.

Established Standards - standards which have been established by various agencies should be incorporated in equipment specifications. Equipment meeting these standards is identified by a seal of approval:

American Gas Association - Gas equipment

American Society of Mechanical Engineers - Steam equipment

National Sanitation Foundation[4] - Tables, racks, sinks, cabinets, carts, dispensers, dollies, hot food tables, shelving, pots, pans, bowls, dish machines, proof boxes, ranges, ovens, mobile food conveyors, spreader plates, steam-jacketed kettles, steam cookers, refrigerators, freezers, peelers, grinders, slicers, mixers are among the items covered.

Underwriters Laboratories - Electric equipment

Standardization Within a County - the problems of procurement, operation and service are simplified by limiting the number of makes of equipment. Service charges per unit are normally less, when this is done.

Use of Brand Names in Competitive Bids

In an opinion (053-299) rendered November 4, 1953 the Attorney General advised that: "A lengthy specification composed or designed solely for the purpose of eliminating competitors other than those able to supply a particular brand name commodity should be avoided and the actual name or common description

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[3]Sanitary Code of Florida 170C-16.06 (2).

[4]For complete listing see "Seal of Approval Listing of Food Service Equipment", National Sanitation Foundation, Ann Arbor, Michigan.

should be used when no other of its kind would be equally satisfactory."

Equipment Included in the Construction Contract

There are several methods of procuring and installing equipment. In general, the following practice is recommended:

Items which are attached to the building should be in the construction contract. This may include: sinks; dish tables; dish machines; hoods; stationary shelving; mop racks; soap, towel and toilet paper dispensers; lockers; mirrors; display areas and bulletin boards; built-in serving and work counters; exhaust fans; water heaters; booster heaters; grease traps and walk-in refrigerators. The county should have the privilege of selecting the type prior to completion of plans and specifications.

Other fixed equipment such as ranges, ovens, steamers, steam-jacketed kettles, some peelers and mixers should also be included in the construction contract. The advantage of having these items in the construction contract is that the contractor becomes responsible for coordinating both the delivery and the installation.

Equipment Items Purchased Directly by the County

When equipment is purchased separately and directly by the county, it should be installed by the general contractor under the supervision of the equipment supplier. The equipment supplier should deliver to the site, uncrate and place ready for connecting. Delivery time should be included in the specifications. It is desirable to require the equipment supplier to instruct in the use of equipment. This instruction in the use of equipment should be specified in the equipment contract.

FUTURE EXPANSION

The school lunch facility should be planned for the ultimate enrollment. Kitchens do not lend themselves to expansion. The ultimate arrangement of equipment should be planned in the original stages. Floor space and the necessary utilities should be provided in the layout for future equipment.

Dining rooms and store rooms lend themselves more readily to future expansion by the simple expedient of moving walls, rather than changes in fixed equipment.

GENERAL SPACE REQUIREMENTS FOR SCHOOL LUNCH PURPOSES

The following may be used as examples, for the preliminary allotment of space.

	Elementary	Junior High	Senior High	
Maximum Enrollment	720	1,200	1,500	
School Lunch Participation	80 %	80 %	80 %	
Approximate Number Meals	575	960	1,200	
Number Serving Counters	1	2	2	
Serving Rate Per Minute	10	20	20	
Dining Room Seating Capacity	240	320	400	
Area in Square Feet:				Approx. % of Total
Per Seat	10	10	10	
Dining Area	2,400*	3,200*	4,000*	60 %
Kitchen (including dishwashing and refrigeration)	800	1,200	1,400	20 %
Serving Area	200	400	400	7 %
Office	60	60	60	1 %
Employees Lounge	150	200	200	4 %
Refuse Area	80	100	120	2 %
Storeroom	275	350	400	6 %
T O T A L	3,965	5,510	6,580	
Approximate Net Area	4,000	5,500	6,500	

*Cafetorium stage not included.

DINING ROOM

Visual Environment

The dining room should provide a cheerful, homelike and restful atmosphere for the activities to be conducted in this space. Walls and ceilings should be light in color, sound-absorbent and impervious to moisture. Texture and color should be considered in the selection of materials for a pleasing and harmonious effect including floor, walls, ceiling, counters, furniture and tableware. To avoid the institutional look, the shape and size of the tables could be varied.

If the dining area is to be used for other purposes than lunch, it should be equipped to perform the additional functions.

Size

Dining room size is subject to many influences including: school lunch participation, closed noon hour, number of children carrying a packed lunch and eating in the dining room, multi-purpose use of the room, number of food choices, speed of service and the lunch schedule. For all practical purposes, the service should be efficiently organized to serve a minimum of 10 students a minute, and the schedule planned to avoid long lines of students.

In general, dining room space should be planned to accommodate 25% to 35% of the enrollment at 10 sq. ft. per dining room seat. Variations may be made for unusual participation, closed noon hour or other local circumstances.

Space for Books

Shelves or racks should be provided for students' books in junior and senior high schools. This makes all of the table space available for eating purposes.

AREAS:	DINING ROOM FINISHES[5]
FLOORS:	NON-ABSORBENT MATERIALS, EASILY CLEANED; FSC 170C-16.08(1) RECOMMEND: QUARRY TILE, CERAMIC TILE, VINYL OR VINYL-ASBESTOS, NON-ABSORBENT CARPET
BASES:	COVED, OR LIKE MATERIAL
WALLS:	SMOOTH, DURABLE, EASILY CLEANED; FSC 170C-16.08(2) RECOMMEND: PLASTER (W/ SURFACE TREATMENT), CERAMIC OR GLAZED TILE, WOOD PANELING, VINYL OR PLASTIC LAMINATES
CEILINGS:	EASILY CLEANED, ACOUSTICAL, LIGHT IN COLOR RECOMMEND: VINYL COVERED ACOUSTICAL CEILING TILE, PLASTER (W/ SURFACE TREATMENT)

[5]Sanitary Code of Florida 170C-16.08 (1) (2).

Acoustical Control

Noise may be controlled in several ways such as using acoustical ceiling materials; separating the dish washing from the dining room; equipping dining room chairs with rubber domes. The use of carpeting in dining rooms is another effort in this direction. Some methods of reducing noise at its source are tabulated in "Space Environments and Equipment for School Lunch Purposes", in the Appendix of this bulletin.

Dish Return

There should be some means of closing the dish return window for kitchen security and multi-use of the dining room. This may be accomplished in several ways, including:

- Standard window with metal frame and translucent glass.
- Standard double doors with 180° swing. For added security they should be provided with a latch or bolt on the kitchen side.

A short tray rail to the window is effective in controlling the traffic and facilitating handling of trays and dishes by students.

The wall surrounding the dish return window and waste can area is subject to considerable soiling, therefore should be treated accordingly.

There are several ways of organizing the return of dishes. In one method the students remove their own plate waste and silver. When containers are located in the dining room, some provision should be made for screening them from dining room view. Occasionally chutes for silver and refuse are provided. The disadvantages of this method are the loss of silver and the difficulty in keeping the chutes clean. Chutes should be located so that silver is removed before the plate waste.

In another method, the school lunch employees scrap the dishes. In this case the scrap holes should be at the inside edge of the soiled dish tables. The number needed depends on the number of people at that location, and whether or not paper and food waste are separated.

Dish Return Variations

Following are some variations in procedure and location of the dish return:

- Conveyor belt transports trays from the dining room to the dish room. This reduces traffic problems and expedites the handling of dishes.

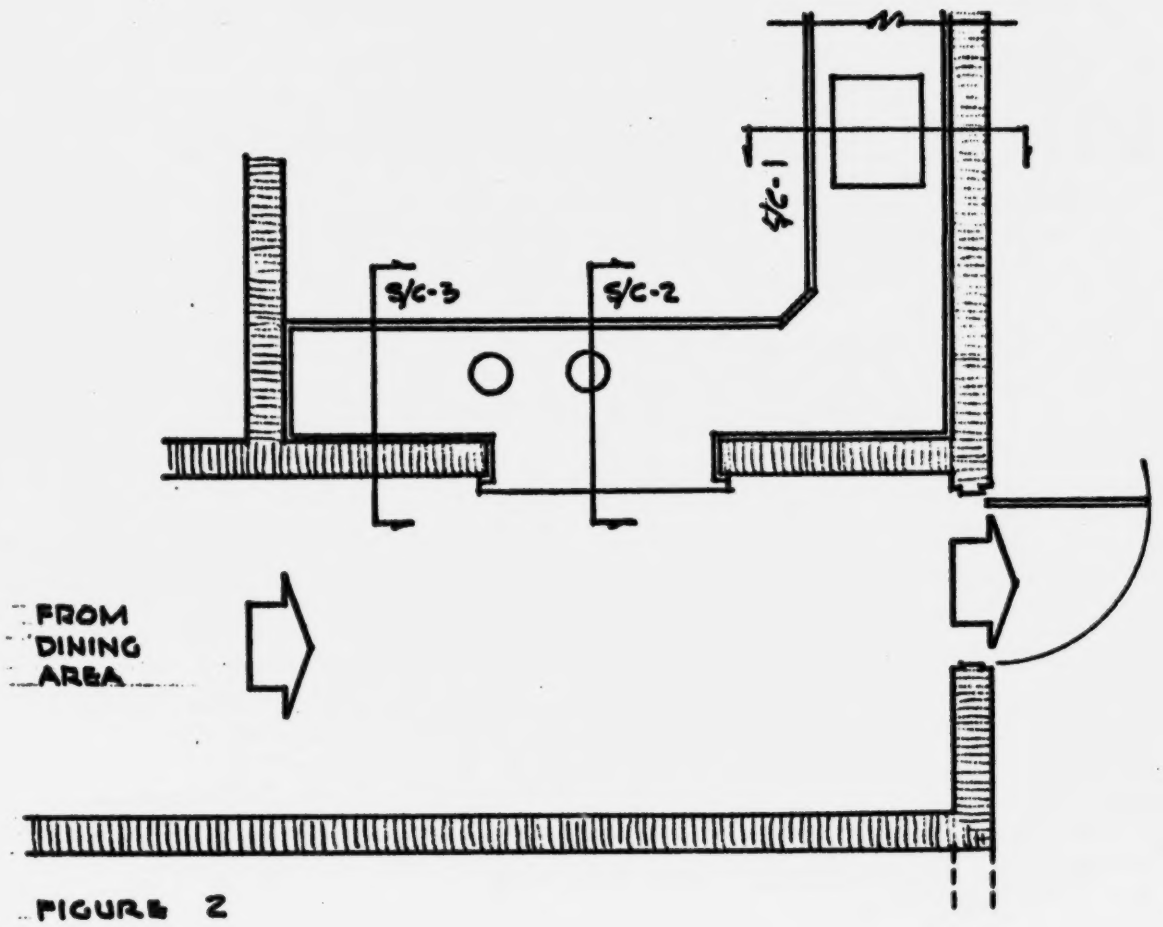
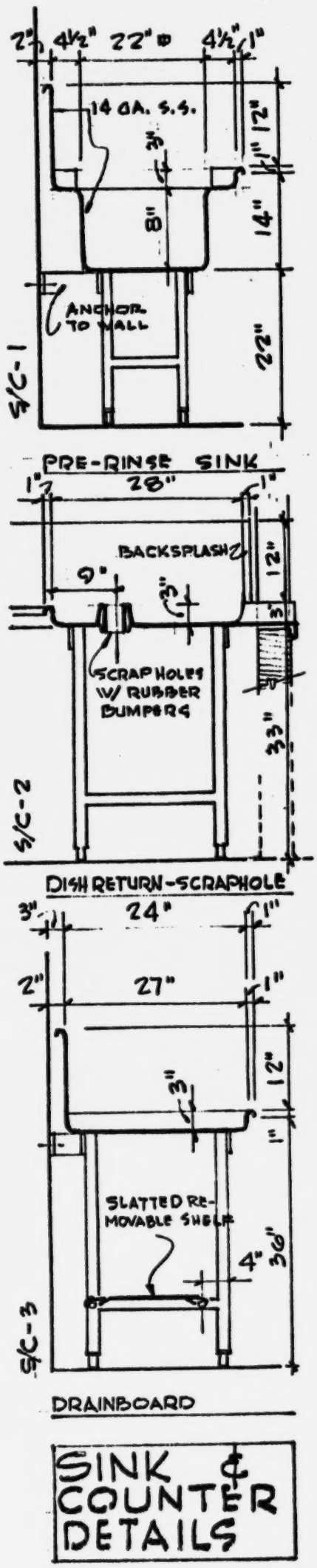


FIGURE 2

"Walk-off" dish return outside the dining room removes the area from view and reduces dining room noise. (Figure 2.)



SINK & COUNTER DETAILS

Remote dishwashing area is sometimes used to insure a smoother flow of traffic from serving to eating to dish disposal without any cross circulation. The disadvantages are difficulty of supervision and returning clean dishes to the serving area.

Two dish return windows may be needed where more than one serving line is used. (Figure 3.)

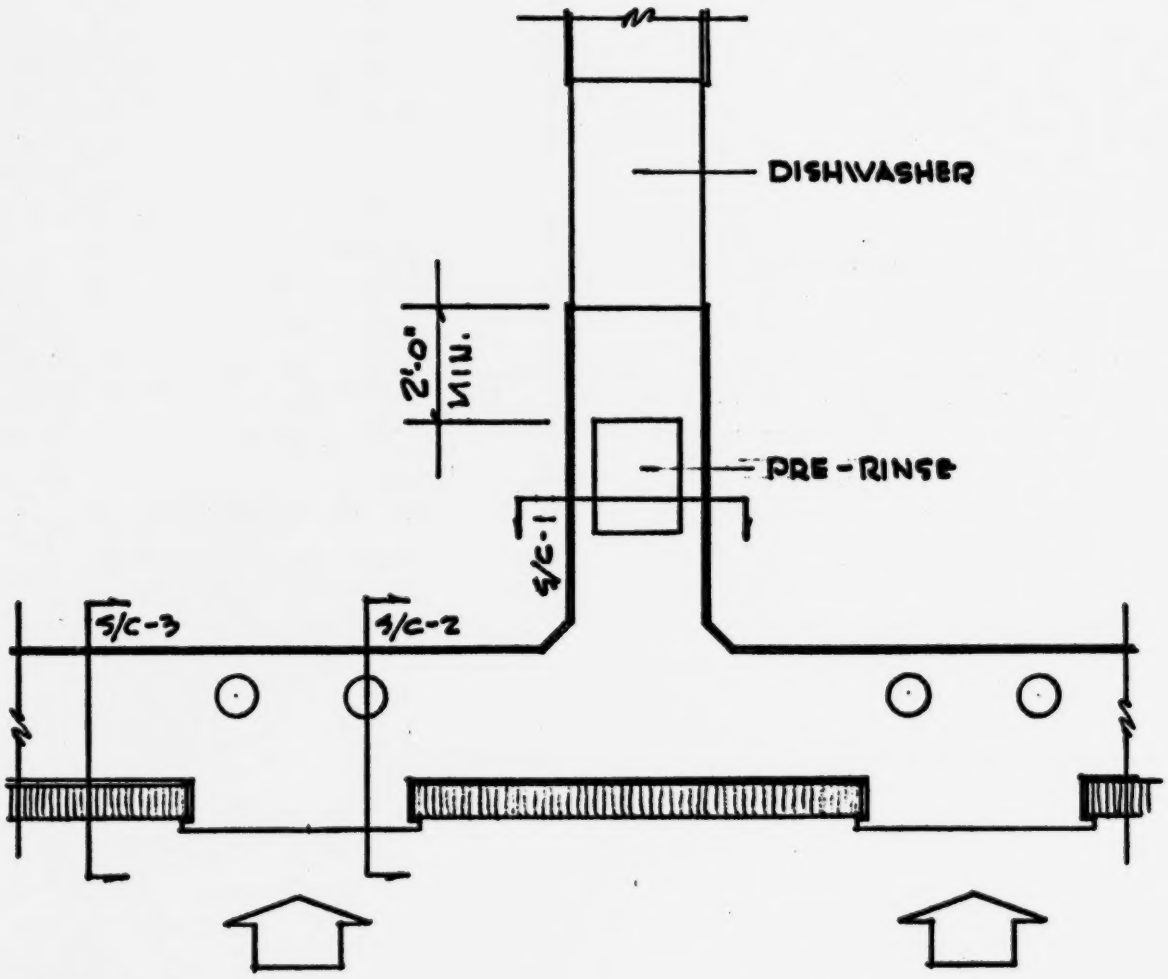


FIGURE 3

Drinking Fountain

An adequate supply of cool drinking water is necessary, preferably located away from the serving line and dish return area.

Display Area

A display area is desirable for all dining rooms. This is used for menus, seasonal decorations and educational materials.

Doors and Windows

"All openings to the outer air shall be effectively protected against the entrance of flies and other insects by self-closing doors which open outward, closed windows, screening, controlled air currents or other effective means. Screening material shall be not less than sixteen-mesh to the inch or equivalent and screens for windows, doors, skylights, transoms and other openings to the outer air shall be tight-fitting and free of breaks."[6] If fly fans are used, they should be designed for that purpose and located over the doors, preferably on the outside. Exit doors for students must be equipped with panic hardware.

Windows should be low enough to provide natural ventilation at the level of seated students and to permit visual contact with the outside.

Multi-Use Function

The educational program of the school may be enhanced by planning the dining area for flexibility of use. Some additional uses are: educational television and large group instruction. Strenuous physical activity should be avoided in the dining room. It may be desirable to divide this space into several smaller areas by the use of sound-retarding folding or sliding partitions.

Lighting and Power Requirements

Multiple purpose dining rooms which are being used for classroom work should have light comparable to classroom foot candle requirements. Light switches should be easily accessible to groups using the room for extra-curricular activities. Grounded electrical outlets should be provided for cleaning, audio-visual and other electrical equipment.

SERVING AREA

In order to use the dining area for other purposes, it is essential that the serving area be separated from the dining room by a sound-retarding partition. For increased ventilation and visual supervision of the dining space, operable sash may be used. Several grounded electrical outlets should be provided in the serving counter.

Finish

Walls adjacent to serving counter and student traffic should be washable.

Number of Serving Counters

The number of serving counters needed depends on the dining room size. In

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[6]Sanitary Code of Florida 170C-16.07 (8)

general the ratio is one counter for every 200 - 250 dining room seats. One or two counters may be provided in dining rooms seating 250 - 300. The second counter is necessary if there are more than 300 seats.

Serving Counter Order

The order may vary, depending on local preference. Where trays or cashier are not used, space need not be provided for them. Serving counters are available in modular units which may be assembled in any order. Some of these are mobile for increased flexibility and to facilitate cleaning.

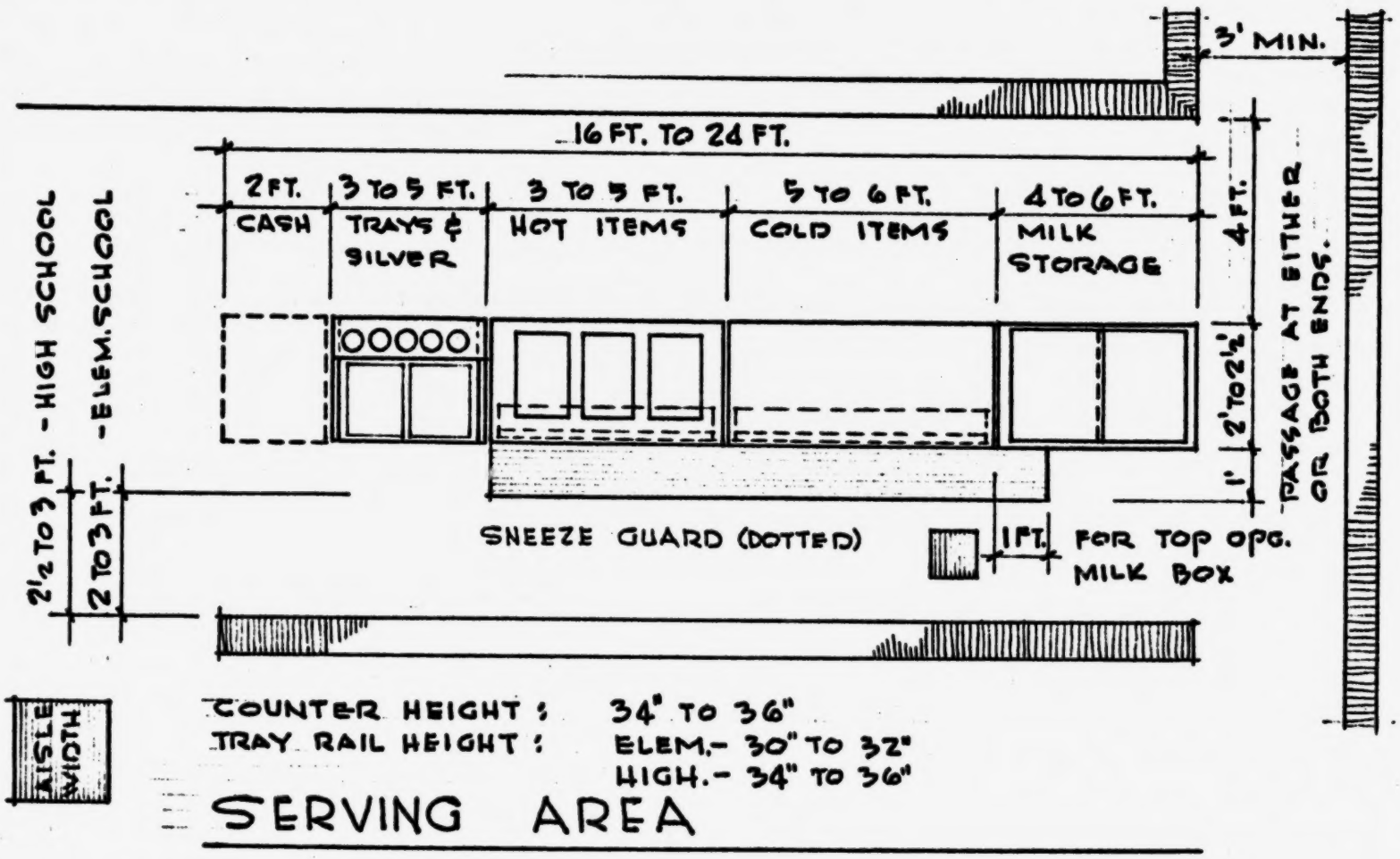
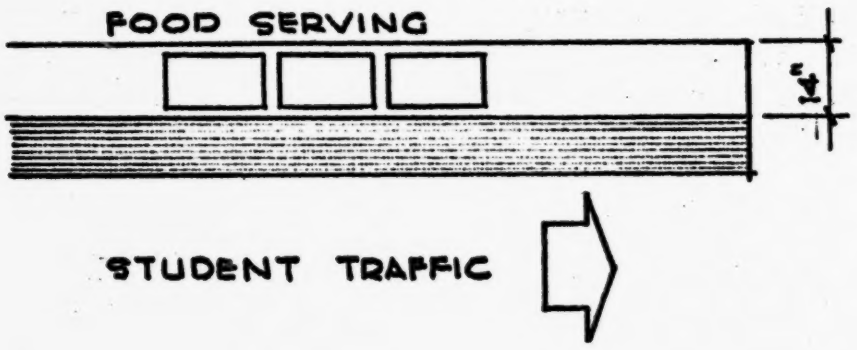
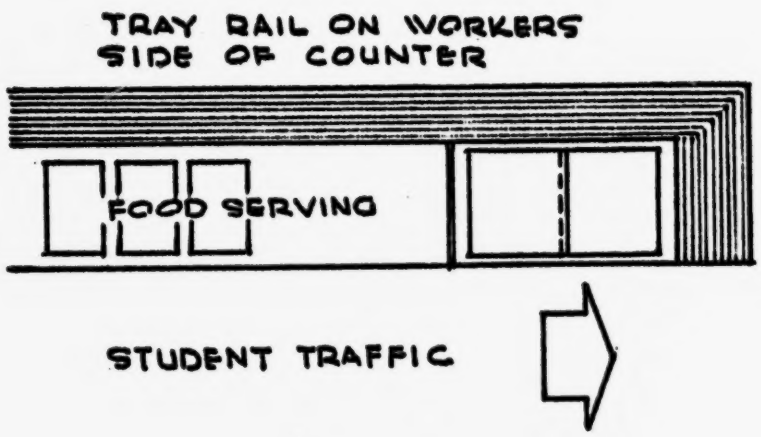


FIGURE 4

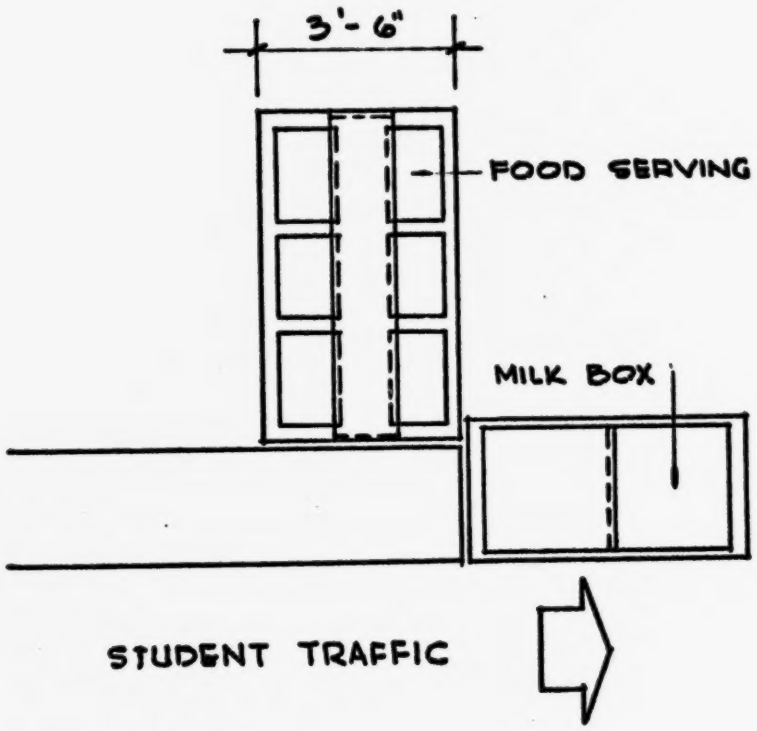
Serving Counter Variations



Narrow counter reduces the reach from server to student.



Tray or plate passed conveniently from one server to the next. Sneeze guards may be used.



Plates stacked in middle of serving table. Foods served simultaneously from both sides. Food not exposed to students, therefore sneeze guard not necessary.

FIGURE 5

Tray Unit

The tray unit should be mobile to permit loading in the dishwashing area and rolled into position at the serving counter. Such units are available with silver containers attached. Trays usually used in school lunch are 12" x 16". The tray section should be low enough to enable children to reach the stacked trays comfortably. (Figure 6.)

Silver

Silver may be included in the tray unit. (Figure 6.) Sometimes cutouts are made in the serving counter top to receive standard silver containers. One common diameter for such containers is 4-3/8". "Facilities (shall be provided) for the storage of tableware, designed and maintained to present the handle to the employee or customer and to cover or protect the portion which may contact the customer's mouth."[7] Knife, fork, spoon and straw may be wrapped in a paper napkin and picked up together.

TRAY CART

WITH SILVERWARE SERVICE

FIGURE 6

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[7]Sanitary Code of Florida 170C-16.06 (h)

Hot Items

Standard pans (usually 12" x 20") are used for serving. Cutouts to receive these may be provided. Heated food tables are not desirable. Hot food, freshly prepared, is served before it has time to become cold. Wood cutting boards are not recommended on serving counters.

Cold Items

This is usually a flat section of counter for salads, relishes, bread, butter and desserts. Refrigerated pans and display shelves are not necessary.

Milk Box

A refrigerated self-service milk box is needed in the serving line. It may be front-loading or top-loading. The capacity should be large enough to handle "special milk" sold in addition to the half pint or more served with the plate lunch. Some milk boxes are self-elevating to keep the containers at the top of the cooler. Some milk boxes have a condensate evaporator, others require a floor drain. A grounded electrical outlet should be provided.

Cashier Section

The end of the counter should be provided with knee space. If the cashier is at the exit end of the serving counter, the tray rail needs to extend to the cashier. If electrical equipment is used, grounded electrical connections should be provided.

Tray Rail

Tray rails are regarded as optional. The closed type, with inverted-V ridges, is preferred. (Figure 7, page 16) The tray rail should be eliminated in front of the milk box. (Figure 4.) This permits students of all sizes to reach milk more easily.

Counter Guards

Counter or sneeze guards are required by the Florida Sanitary Code. "Unwrapped foods ..... placed on counters shall be protected against contamination from customers ..... Such protection shall be provided by glass or other approved enclosures or by the installation of easily cleanable sneeze guards or other effective counter protector devices designed to intercept a direct line between the mouth of the customer and the food. Self-service openings in counter guards shall be so designed and arranged as to protect food from manual contact by customers."[8] (Figure 7, page 16)

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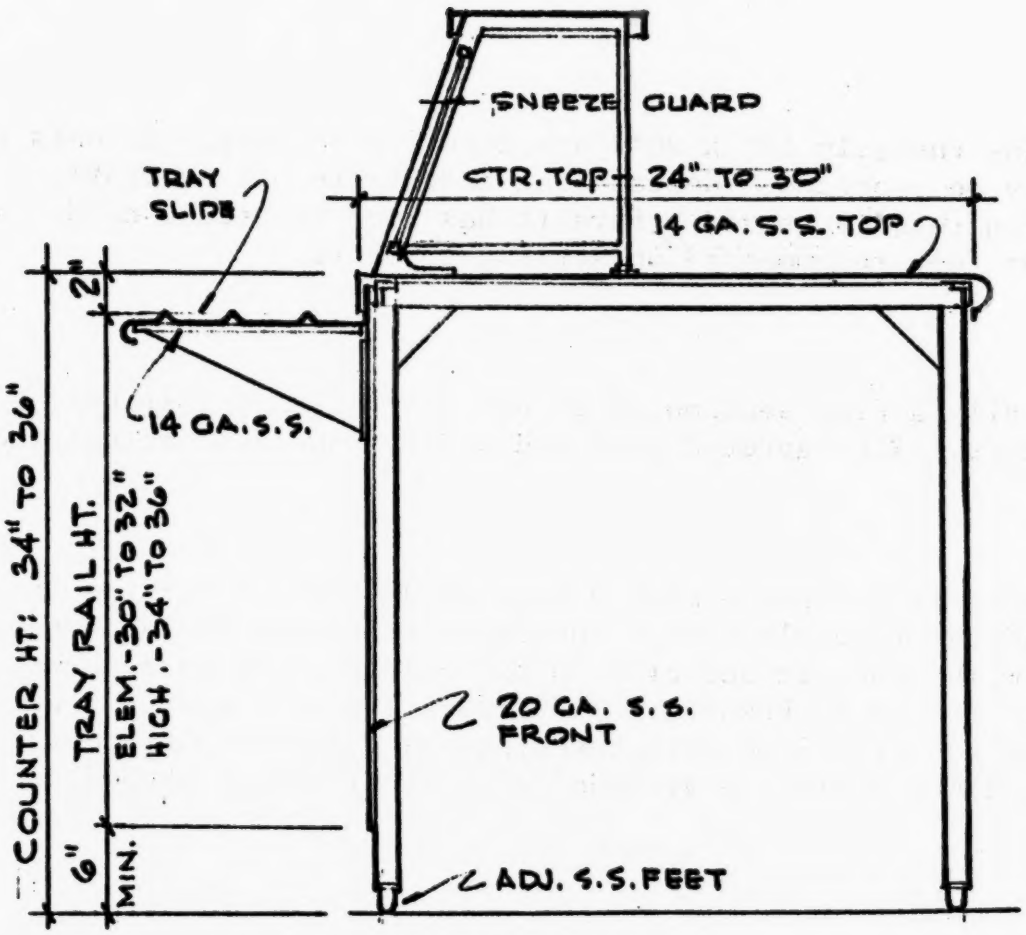
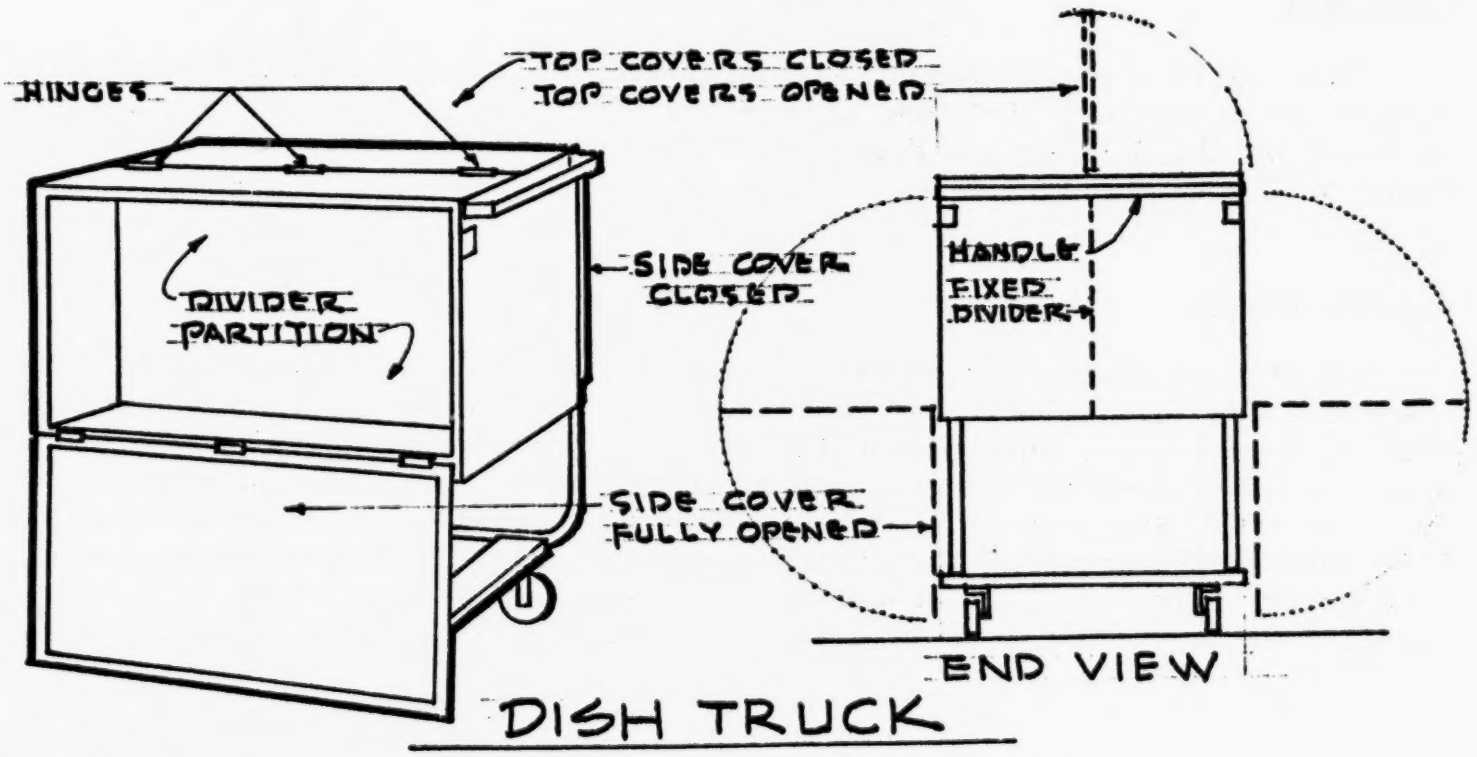
[8]Sanitary Code of Florida 170C-16.04 (12)



SERVING COUNTER

FIGURE 7



DISH TRUCK

FIGURE 8

Dish Storage

Dishes should be stored at the point at which they are used. Mobile storage units are recommended. These may be loaded in the dishwashing area and stored under the serving counter. This necessitates leaving clear space under the serving counter where initial serving of plates occurs. (Figure 8, page 16) Dish storage should conform to good sanitary practices.

Supplies and Food Replenishments

File units with angle ledges may be provided under the serving counter for 18" x 26" pans, 14" x 18" trays, 12" x 20" pans or a combination of these. They may be mobile for loading in the kitchen. They should conform to county sanitation regulations. Fixed shelving is not recommended.

KITCHEN

Size

The necessary kitchen space can be determined accurately only by making a functional layout. Equipment to be used should serve as the determining factor. The following may be used as a general guide for the preliminary allotment of space. Kitchen size is interpreted as including receiving area, refrigerators, preparation area up to the serving counter, and dishwashing.

Number Meals Served	Kitchen Area	Approximate Area Per Meal Served
Up to 300	Up to 500 sq. ft.	1.6 sq. ft.
300 -- 600	500 - 850 sq. ft.	1.4 sq. ft.
600 - 1000	850 - 1200 sq. ft.	1.2 sq. ft.
1000 - 2000	1200 - 1800 sq. ft.	.9 sq. ft.

Too much space causes extra steps. Too little space results in crowding which in turn creates confusion and inconvenience. A rectangular kitchen of good proportions and with the serving counter on the long axis is usually a good arrangement.

Number of Employees

The number of employees has considerable bearing on kitchen planning. This number varies with local practice, amount of labor saving equipment, menu offerings and the amount of preparation on the premises. The following may be used as a guide:

Serving up to 300 meals	1 - 4 employees
Serving 300 - 600 meals	4 - 6 employees
Serving 600 -1000 meals	6 -10 employees
Serving 1000 -2000 meals	10 -20 employees

In general, there would be a slight increase in the number of employees if the menu provides a choice or if the school is a junior high or high school demanding larger quantities of food. The figures include the manager. They are based on an 8-hour day.

Sequence of Operation

As indicated previously, (Figure 1, page 3) food proceeds generally from receiving to storage to preliminary preparation to preparation to serving. This should be accomplished with a minimum of path crossing and back tracking. Some foods proceed directly from storage to preparation, others may involve a minimum of preparation and go almost directly to serving.

Equipment

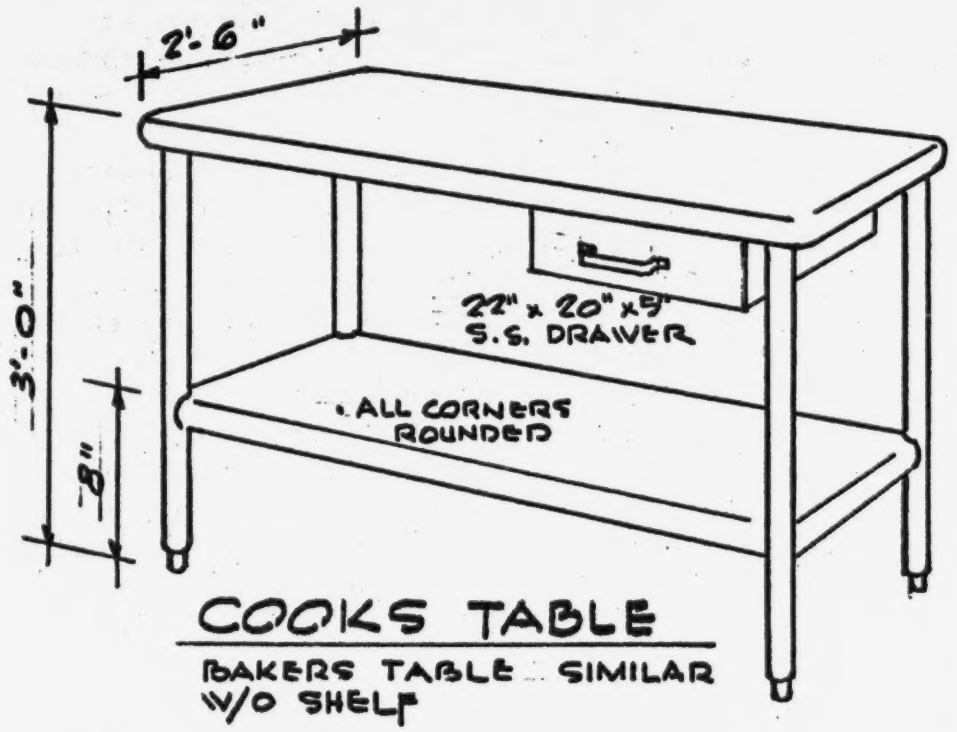
For equipment needed refer to "Equipment Recommendations, Approximate Sizes and Space Considerations", Appendix, pages 39 - 46.

AREA:	KITCHEN FINISHES
FLOORS:	SMOOTH, EASILY CLEANED, NON-ABSORBENT, NON-SLIP, GREASE-PROOF; FSC 170C-16.08(1), SDE REGULATIONS 130-7.47 RECOMMEND: QUARRY TILE, CERAMIC TILE
BASES:	COVED, QUARRY OR CERAMIC TILE
WALLS:	EASILY CLEANED, SMOOTH, NON-ABSORBENT; FSC 170C-16.08(2) RECOMMEND: CERAMIC TILE, KEENE'S CEMENT PLASTER-ENAMELED, VITRO-GLAZE OR PLASTIC LAMINATES.
CEILINGS:	EASILY CLEANED; FSC 170C-16.08(2) RECOMMEND: VINYL COVERED ACOUSTICAL CEILING TILE, SMOOTH FINISH PLASTER

Equipment Placement

Productivity of employees can be increased with good "space engineering." Kitchen equipment should be arranged in a logical work order.

Convenient grouping within a work area is important. Various areas may combine or overlap, depending on the size of the department. In general, the following suggestions should be observed:



COOKS TABLE

BAKERS TABLE SIMILAR W/O SHELF

FIGURE 9

- Range and cook's table convenient to pot sink, refrigerator and the section of serving counter where hot foods are served.

- Oven and baker's table convenient to each other and to pot sink, refrigerator and serving counter.

- Vegetable sinks and peeler near the point of delivery, refrigerator and cooking area.

- Where one mixer is provided, it should be convenient to both baker and cook or mounted on a mobile stand, equipped with lock casters.

- Refrigeration close to delivery entrance, vegetable and salad preparation, cook's table, baker's table and serving counter.

- Work tables located for convenience in relation to preparation equipment (ranges, ovens, steam equipment, mixers). This is for depositing ingredients and utensils. The alternative is to provide mobile equipment, such as a small table (2' x 4', range and service counter height) to use in conjunction with stationary equipment. Plan "parking space" for mobile equipment near its point of greatest use.

- Right to left direction is usually more convenient than left to right. Some practical applications of this premise are:

  Dish return window to the right of the dishwashing apparatus;
  Vegetable peeler at right end of the vegetable sink;
  Soaking sink at right end of pot sink.

- Central or "island" installation of cooking equipment facilitates cleaning and makes it accessible from all sides.

- Any equipment which is not readily movable should be installed a sufficient distance from any other fixed equipment or wall, to allow space for cleaning. The exact distance will depend on the size and type of units. "Where space behind the equipment which must be cleaned is more than eight feet from the open end, the width of such space should be at least 24" if only one end is open, or 18" if both ends are open."[9]

On this subject the Florida Sanitary Code reads as follows: "Equipment shall be so installed as to facilitate the cleaning thereof and of all adjacent areas with the equipment in place, unless the equipment is readily movable for this purpose ..... Fixed equipment shall be installed on raised platforms ..... to prevent ..... debris from seeping or settling underneath, between or behind, in spaces not fully open for cleaning and inspection; or shall be elevated on legs or feet at least six inches above the floor. Such equipment shall be installed flush to the wall with the space closed and sealed; or a sufficient, unobstructed space from the rear wall to the back of the equipment shall be provided to permit cleaning. The space between adjoining units or between the side of a unit and the adjacent wall shall be sealed unless there is sufficient space to allow for ready and thorough cleaning between behind and beside all such equipment." [10]

Modular Co-ordination of Equipment

In selecting equipment, consideration should be given to modular co-ordination. For example, cooling racks, refrigerators, under counter and other storage units are available for use with standard pans. Each shelf position spaced on approximately 3" centers, will hold one 18" x 26" bun pan or two 18" x 14" trays. They are also designed to accommodate 12" x 20" serving counter insets.

The extensive use of 18" x 26" pans dictates the selection of oven equipment sized to accommodate these pans and 30" sink compartments to facilitate washing them. Large steamers should be wide enough for two standard pans.

Aisle Allowances

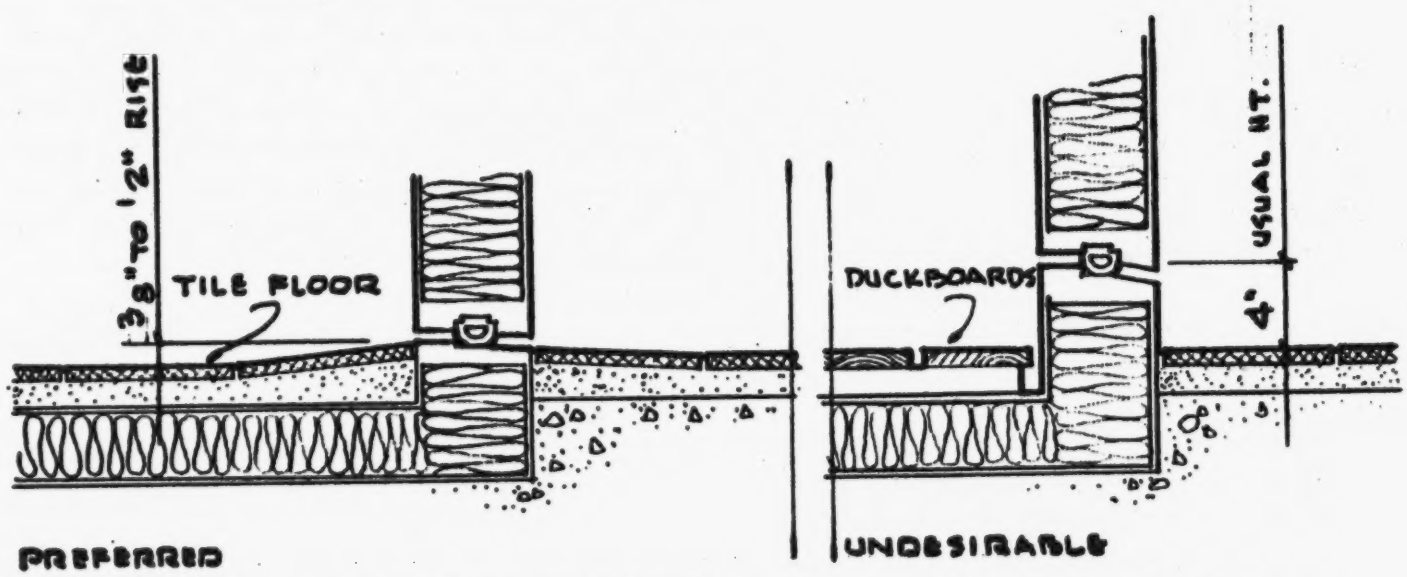
Optimum aisle allowances are as follows:

Between oven equipment and work tables	3-1/2 feet
Traffic aisles	3-1/2 to 4 feet
Traffic aisles where mobile equipment is used (Store room to cook's table, cook's table and baker's table to serving counter, dish room to serving counter, etc.)	4 feet
Between front of refrigerator and other equipment	3-1/2 feet
Between two work tables	3-1/2 to 4 feet

[9]National Sanitation Foundation, Standard #4, 5.01, page 22.
[10]Sanitary Code of Florida 170C-16.06 (3)

Walk-In Refrigerators

- Walk-in refrigerators may be the sectional pre-fabricated type or built-in as part of the building contract.
- They should have vermin-proof insulation on walls, floor and ceilings.
- Tile is preferred for the interior finish of walls and floors. However, Portland cement plaster is acceptable as a wall finish.
- The floor should be level with the adjoining floor, except for a slightly raised door sill. (Figure 10.) This permits the use of mobile equipment.



WALK-IN REFRIGERATOR - SECTION THRU DOOR

FIGURE 10

- A floor drain should be provided on the outside for cleaning, condensate or both.
- Removable self-contained refrigeration units are available which may be shipped to the manufacturer for repairs.
- Mobile, adjustable shelving is recommended.
- Eight feet is regarded as a good width for walk-in refrigerators. This provides 2-1/2' of storage space on either side and a 3' passage. Dimensions otherwise will depend on the size of the school.
- Combination reach-in walk-in refrigerators are available.
- Light-weight plastic doors are recommended.

The need for a walk-in refrigerator is determined by the frequency of delivery, by volume of food handled and by savings effected by bulk purchase. The advantages are:

- Immediate bulk storage is possible in hampers, crates, baskets and boxes, the size and construction of which are not suitable for reach-in storage.

- Various pieces of mobile equipment may be used to transfer food from the walk-in to the preparation or serving area.

The disadvantages are:

- Walk-in refrigerators can seldom be centrally located for maximum convenience.

- Much of the walk-in refrigerated space is wasted.

Steam Equipment

Every effort should be made to provide steam equipment as needed (page 39). Steam-jacketed kettles and steam cookers with self-contained gas or electric' steam generators and in combination units, are available. Steam-jacketed kettles are used for vegetables, meats, cereal products, sauces and puddings. They provide a quick method of cooking and eliminate the dangers incumbent in handling heavy stock pots of hot liquids. Steam cookers are equally versatile. Steam cooking minimizes shrinkage, cooking time and nutritive loss.

Floor areas under steam equipment need independent drainage. They may be treated in one of the following ways:

Surrounded by a low curb
Depressed 2 or 3 inches
Provided with a gutter covered with flush grating

Steam-jacketed kettles should be provided with a swivel faucet with hot and cold water supply for ease of filling or cleaning.

Cooking Fuel

The selection of fuel depends on local utility rates and service as well as original cost of equipment and upkeep. Where schools are using large amounts of electricity, the rate structure may be lower.

Generally the original cost of gas equipment is less. It is important that the gas supply be adequate for the peak demand.

Electric cooking is cleaner, cooler and permits greater accuracy of control. The possibility of the cost of a transformer and summer demand charges should be considered.

Mobile Equipment

All types of receiving, preparation, holding and serving equipment are being put on wheels: scales, carts, utensil racks, storage bins, shelving, chopping and slicing machines, cooling racks, proofing cabinets, mixers, serving counter units, pot and pan soaking sinks, vegetable peelers, small work tables.

Casters should be easy rolling, durable, moisture and grease resistant, ball bearing and quiet. They should be swivel if it is necessary to maneuver sideways; rigid for long straight travel. A combination of swivel and rigid is frequently the best solution. Larger wheel diameters move more easily. Casters 5 inches in diameter are recommended. Mobile kitchen machines, especially, should have retractable legs or a locking device.

The merits of mobile equipment include:

- Greater flexibility in arrangement and use.
- Ease of cleaning both the equipment and the space around it.
- Economy of effort and time resulting in financial economy.

It is important to plan storage space at the point of greatest use, for each piece of mobile equipment as well as adequate aisle allowances and sufficient turning radii. Normally a four-foot aisle is adequate. Entrance, store room and walk-in refrigerator doors need to be wide enough for using mobile equipment.

Vertical Storage

Vertical storage in the kitchen is a means of keeping kitchens compact. Some applications are pan racks, cooling racks, and utensil racks. As many as 20 sheet pans of baked goods can be housed vertically in floor space less than 2' x 3'. This leaves work tables free for preparation. Racks for utensils, supplies or finished products may also be used over other pieces of equipment. Upright freezers have a greater storage capacity for floor area occupied than chest type.

Use of Partially Prepared Food

Certain adaptations need to be made in kitchen planning when market conditions and labor costs warrant extensive use of "convenience" foods. If ready-to-cook vegetables (canned, frozen, dehydrated, freshly prepared) are used, there is little need for a vegetable peeler and vegetable sinks.

Reliance on frozen foods requires an increase in frozen food storage.

Ready-to-cook meat, poultry and fish are used extensively making meat handling equipment unnecessary.

Because of a long history of federal commodities and state emphasis on school baked products, schools in Florida bake bread, biscuits, and rolls extensively. These products in addition to baked desserts and main dishes demand extensive oven space.

Pot Washing Arrangement

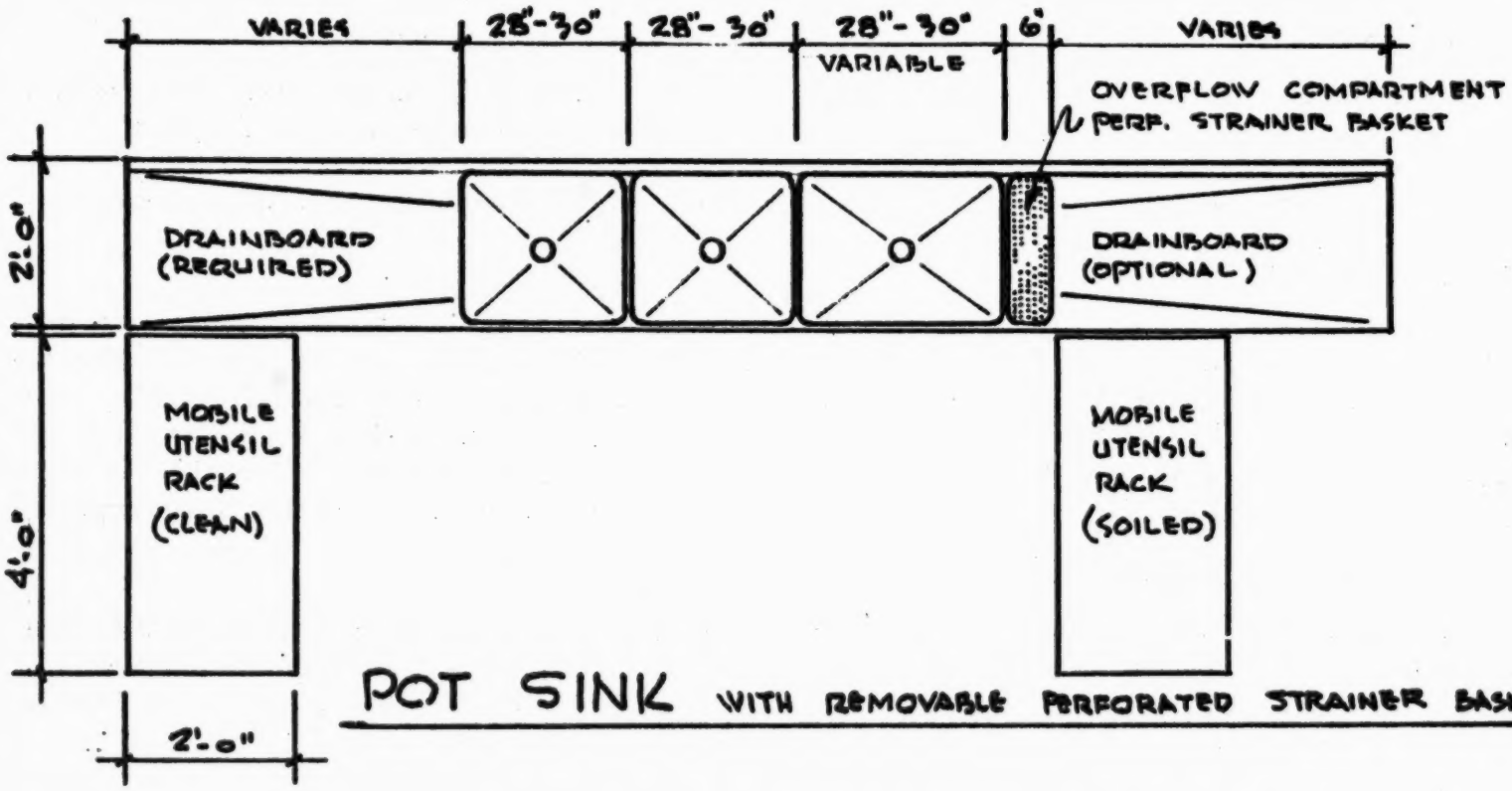
The process of cleaning pots and pans includes scraping, soaking, washing, rinsing, sanitizing and drying.

The "scraped" material may be disposed of by one of the following methods:

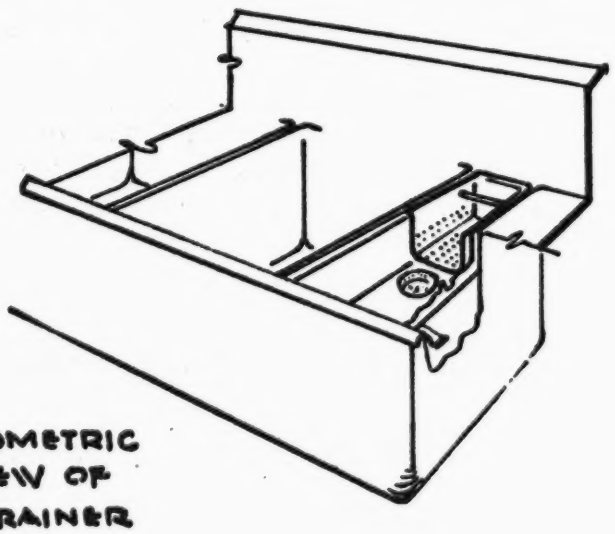
- A disposal unit.
- A perforated, removable scrap tray preceding the soaking compartment. This should be level with the top of the sink, 4" - 6" deep and drained.
- A garbage receptable.

At least three compartments are required. "All sinks shall be of adequate size and depth to accommodate the utensils to be washed. ..... Sinks shall be provided with drainboards so located or so constructed that soiled and cleaned utensils are kept entirely separate. ..... the hot water system shall provide and maintain water at a temperature of at least 170°F."[11]

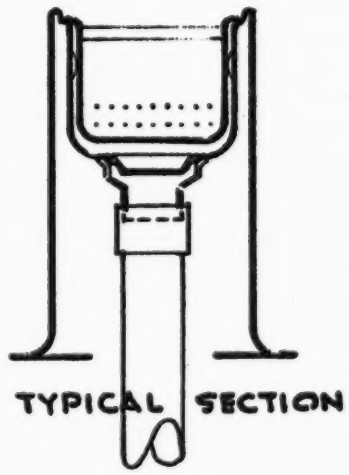
Mobile racks for soiled and clean pots and pans may be used in conjunction with the sink. A storage shelf may be placed over it.



POT SINK WITH REMOVABLE PERFORATED STRAINER BASKET



ISOMETRIC VIEW OF STRAINER



TYPICAL SECTION

FIGURE 11

[11]Sanitary Code of Florida 170C-16.06 (m) 1.

Air Conditioning and Ventilation

Free circulation of air at workers' level is necessary. Cross ventilation is desirable.

All interior kitchens should be mechanically ventilated with fans to provide 30 air changes per hour. Fans should be located to provide uniform distribution of air in kitchen. They should be supplied with bird screen and automatic shutters. A slightly negative pressure in the kitchen will prevent hot air from flowing from the kitchen to the dining room. Air conditioning may be used in lieu of mechanical ventilation.

Cooking equipment (steam cookers, steam-jacketed kettles, ranges, gas ovens) may be supplied with special ventilation. There are two basic types:

- Under shelf ventilator projects forward from the rear edge of the cooking equipment. This type of installation catches the heated air and steam closer to the point of origin and draws it through a filter or baffle system. The under shelf ventilator is normally the same length as the cooking equipment.

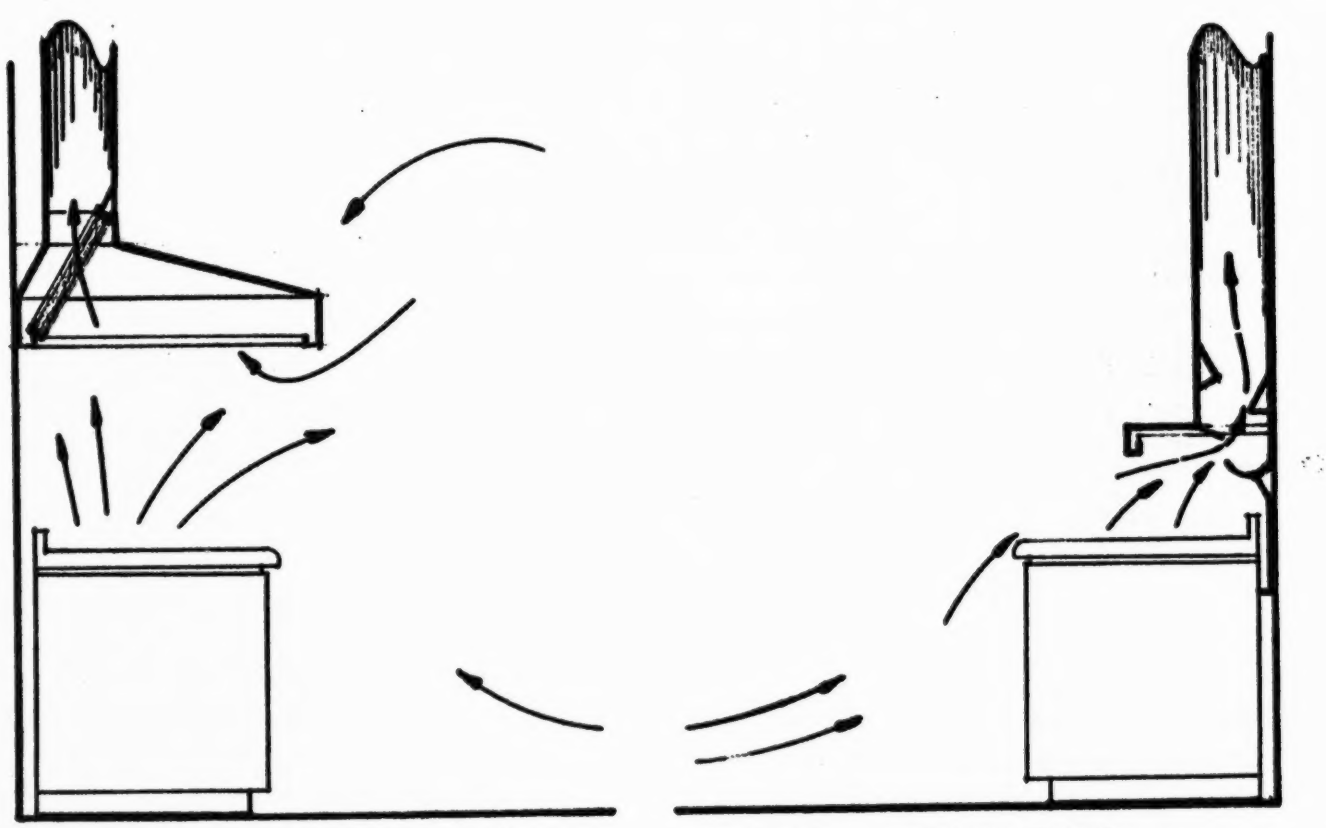
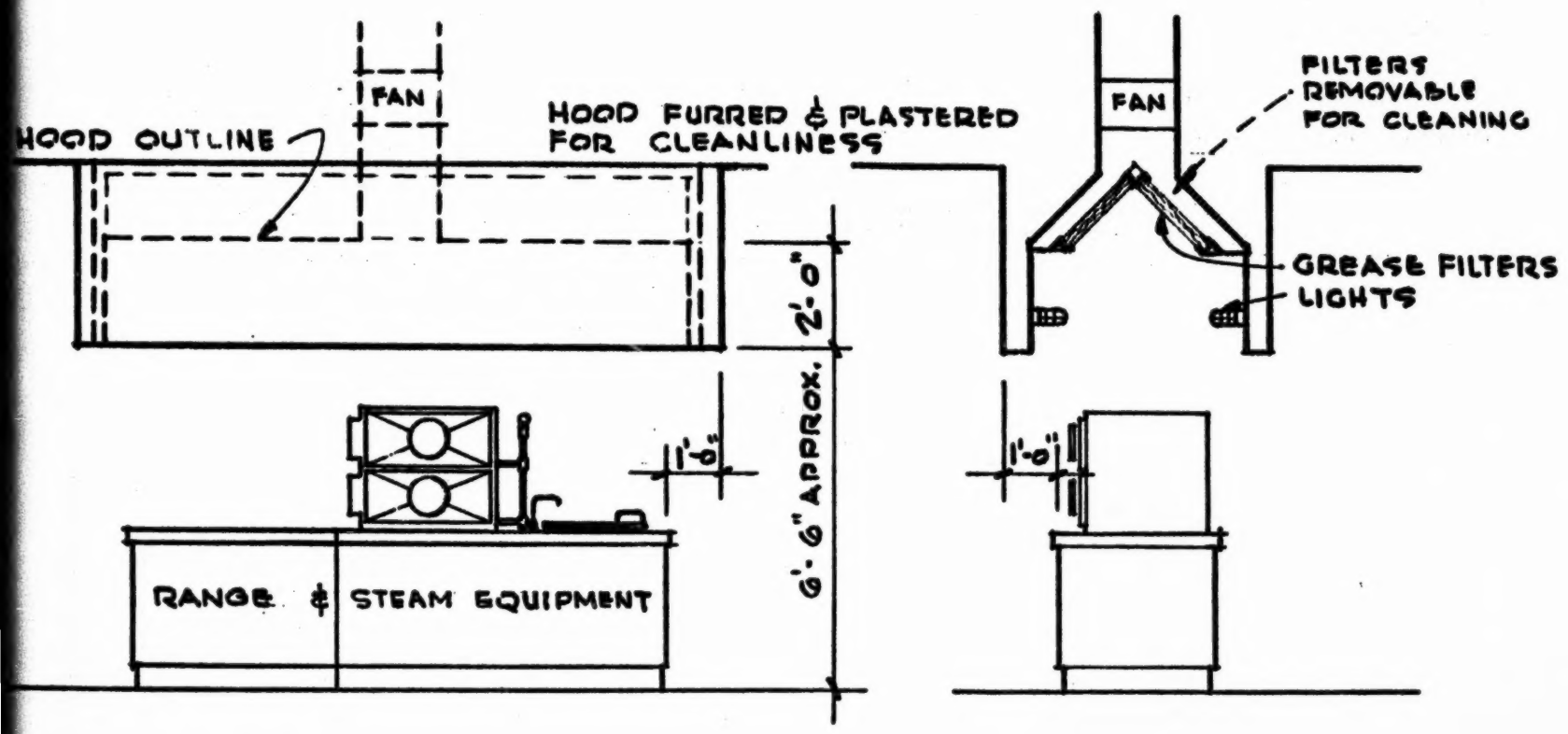


FIGURE 12

- Overhead canopy or hood which overhangs the cooking area on all sides. It should have an inlet capacity of 100 CFM per square foot at bottom edge of hood. In order to reduce exhaust capacity requirements, blank-off sheets (not to exceed 50% of total area) may be incorporated. With blank-off sheet, the inlet capacity of the free area should be based on 125 CFM per square foot. The hood is usually equipped with removable, washable filters and vapor-proof lights. Exhaust fans should be furnished with sealed bearings and mounted in such a way as to minimize vibration.



OVERHEAD HOOD

FIGURE 13

Plumbing

Plumbing pipes should not protrude from the floor but should extend from the walls wherever possible. Pipes extending from the walls should have a minimum clearance from the floor of 8". Drainage and waste lines should have accessible clean-outs. Drainage for steam cookers, steam-jacketed kettles, pot sinks, pre-wash and dishwasher shall be through an outside grease trap. (Summary of Mechanical Services, page 47) Disposal units shall by-pass the grease trap.[12]

Floor drains and hose bibbs should be provided to facilitate cleaning

[12]Sanitary Code of Florida 170C-7.0713 (b)

the floor. Floor drains should be located adjacent to walk-in refrigerators, dishwashers, vegetable peelers, steam cookers, steam-jacketed kettles and reach-in refrigerators and milk boxes not provided with evaporators. In addition vegetable peelers require a peel trap or a disposal unit. (Summary of Mechanical Services, page 47)

Floor drains should be located away from traffic and work aisles. One eighth inch per foot is suggested as the proper pitch of floor to drains. When the pitch is greater than this, it is difficult to level equipment.

Lighting and Wiring

Both natural and artificial lighting are desirable. Windows are preferable to skylights. If skylights are used they should be light-diffusing. Thirty to fifty foot candles total are needed at work surfaces. The lighting circuit control panel for all school lunch areas and power circuit control for kitchen should be readily accessible to the kitchen and not placed in the storeroom. Special wiring and outlets are required for heavy-duty equipment. Voltage requirements of equipment should be furnished the architect at an early date and wiring and outlets provided accordingly. Spare circuits for future needs are necessary. Switches should be within the reach of workers.

Finish

Kitchen floors should be slip-resistant quarry or ceramic tile. They are more durable than the resilient types. Coved bases should be provided.

Kitchen walls shall be impervious and washable. Glazed tile is desirable. Painted smooth plaster is acceptable for areas above wainscot, not subject to splashing and daily washing.

"Acoustical materials may be used on ceilings provided ventilation is adequate to minimize grease and moisture absorption."[13]

"Studs, joists and rafters shall not be left exposed in food preparation or washing areas or toilet rooms."[14]

Doors

Service entrance, store room, and any doors where mobile equipment is used, should be a minimum of 3-1/2 feet wide. Exterior doors must open outward and be provided with self-closing devices.

Bulletin Board

A small bulletin board is needed in the kitchen for posting menus, health

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[13]Sanitary Code of Florida 170C-16.08 (2)
[14]Ibid.

cards, work schedules and other notices.

DISHWASHING AREA

The dish return arrangement was considered along with dining room planning (page 8). Other factors involved are presented here.

Scrap Holes

The number and location of scrap holes depends on the method used. If more than one person is scrapping dishes, or if paper waste is separated from food waste, two are needed. If students remove the waste from their plates, the scrap holes should be 6" from the dining room side of the soiled dish tables. If the waste is removed from the opposite side, they should be located 6" from that side.

Pre-Rinse Arrangement

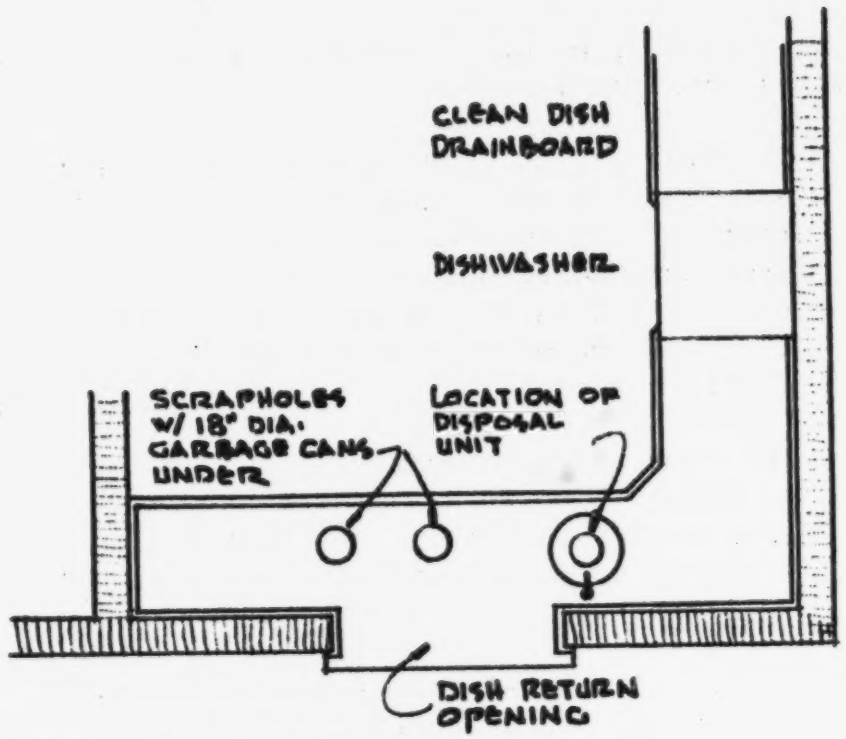
After paper napkins, straws, milk cartons and unconsumed food have been removed from the plates, the remaining waste is handled by some type of pre-rinse arrangement. Usually one of the following methods is employed.

- Mechanically Operated Pre-Wash is available in most standard conveyor type dishwashers. These add a maximum of two feet to the length of the machine. The advantages are that the pre-wash operation is completely automatic. The installation requires less floor space than a pre-rinse sink.

  The recirculating type pre-wash is recommended. It utilizes the overflow of wash water and detergent from the wash tank and pumps it under pressure.

- Disposal Unit used for the pre-rinse operation. These are sometimes prohibited by local ordinance. The fall of the sewer line must be adequate. The disposal unit should be no less than 1-1/2 horse power, connected to the direct cold water line for adequate pressure, and should by-pass the grease trap. Disposal units add to the original equipment cost but reduce labor and the need for other garbage-handling equipment and space. (Figure 14, page 29)

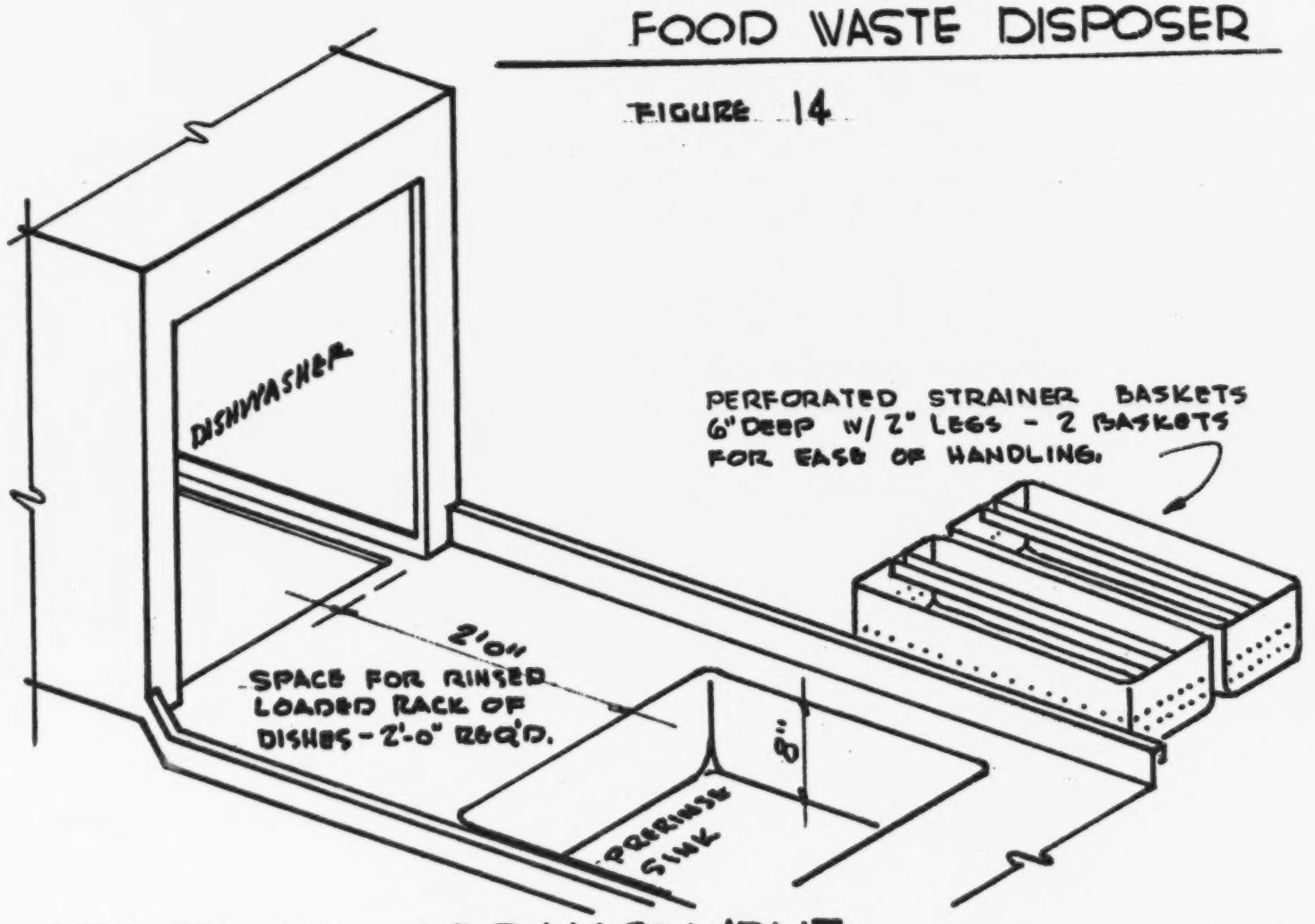
- Pre-Rinse Sink - 22" x 22" x 8" deep, equipped with an overhead spring action type spray for pre-rinsing the dishes in dishmachine rack, a rack track and perforated removable baskets. This sink should be located a distance of two feet from the dishmachine to provide space for one additional loaded rack of dishes. A splash shield may be added along the front edge of the unit to protect the operator. (Figure 15, page 29)



SUGGESTED LAYOUT

FOOD WASTE DISPOSER

FIGURE 14



PRE-RINSE ARRANGEMENT

FIGURE 15

Dish Machines

"When spray type dishwashing machines are used the following ..... requirements shall be met:

- The flow pressure shall be not less than 15 nor more than 25 pounds per square inch on the water line at the machine and not less than ten pounds per square inch at the rinse nozzles. (A pressure gauge shall be installed or a suitable gauge cock shall be provided in the rinse line, immediately upstream from the dish washing machine to permit checking the flow pressure of the final rinse water.)

- The wash water temperature shall be at least 140°F..... the final or fresh rinse shall be at a temperature of at least 180°F at the entrance of the manifold. When a pumped rinse is provided, the water shall be at a temperature of at least 170°F.[15] (Easily readable thermometers shall be installed near the discharge end of the machine, so located as to show the temperature of the final rinse water entering the manifold. Thermometers shall also be provided to indicate the temperature of the water in all tanks of machines.)"

Rinse Injector

Rinse injectors add a "wetting agent" to the rinse line of the dishwashing machine which reduces the drying time of dishes and silver. When a rinse injector is used, the clean dish area may be reduced.

Ventilation

Adequate ventilation in the dishwashing area is needed. A direct flue connection from the dishwashing machine is more effective than a vented hood.

HOT WATER SUPPLY

The general supply of hot water should be 120° - 140° at the point of use. Dishwashing rinse water must be 180° at the entrance of the manifold. There are several ways of providing 180° rinse water:

- Two-temperature hot water system.

- A booster heater on the rinse line of the dishwashing machine. This should not be confused with the wash tank heater which is standard equipment on most dishwashing machines.

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[15]Sanitary Code of Florida 170C-16.06 (5) (b)

- For hand dishwashing a gas or electric burner may be provided under the rinse compartment. When water conditions permit, an electric immersion element within the rinse compartment may be used. The switch should be in an accessible but protected location. A false bottom to protect the element may be used. The heating element should be installed in such a way that the sink and the element may be easily cleaned.

It is more economical, satisfactory and dependable to have a separate hot water supply for the kitchen, located close to it. (Appendix, page 48).

OFFICE AREA

The manager's desk should be located for a view of the entire kitchen. A separate office is desirable in schools serving 500 or more students. Some means of ventilation should be provided. Office equipment should include a desk, two chairs, file, waste basket, telephone and adding machine. Office and store room functions are not compatible, therefore a desk location within the store room is not recommended.

STORE ROOM

"Food shall be stored above the floor, on clean shelves, racks, dollies or other clean surfaces in such a manner as to be protected from splash and other contamination."[16]

The size of the store room depends on purchasing policies, the location of the school, delivery service and whether central storage is available. In general, the store room should be approximately one-third the size of the kitchen. Expressed in per meal terms, the size might vary from 1/4 square foot per meal served in large schools to 1/2 square foot per meal served in smaller schools.

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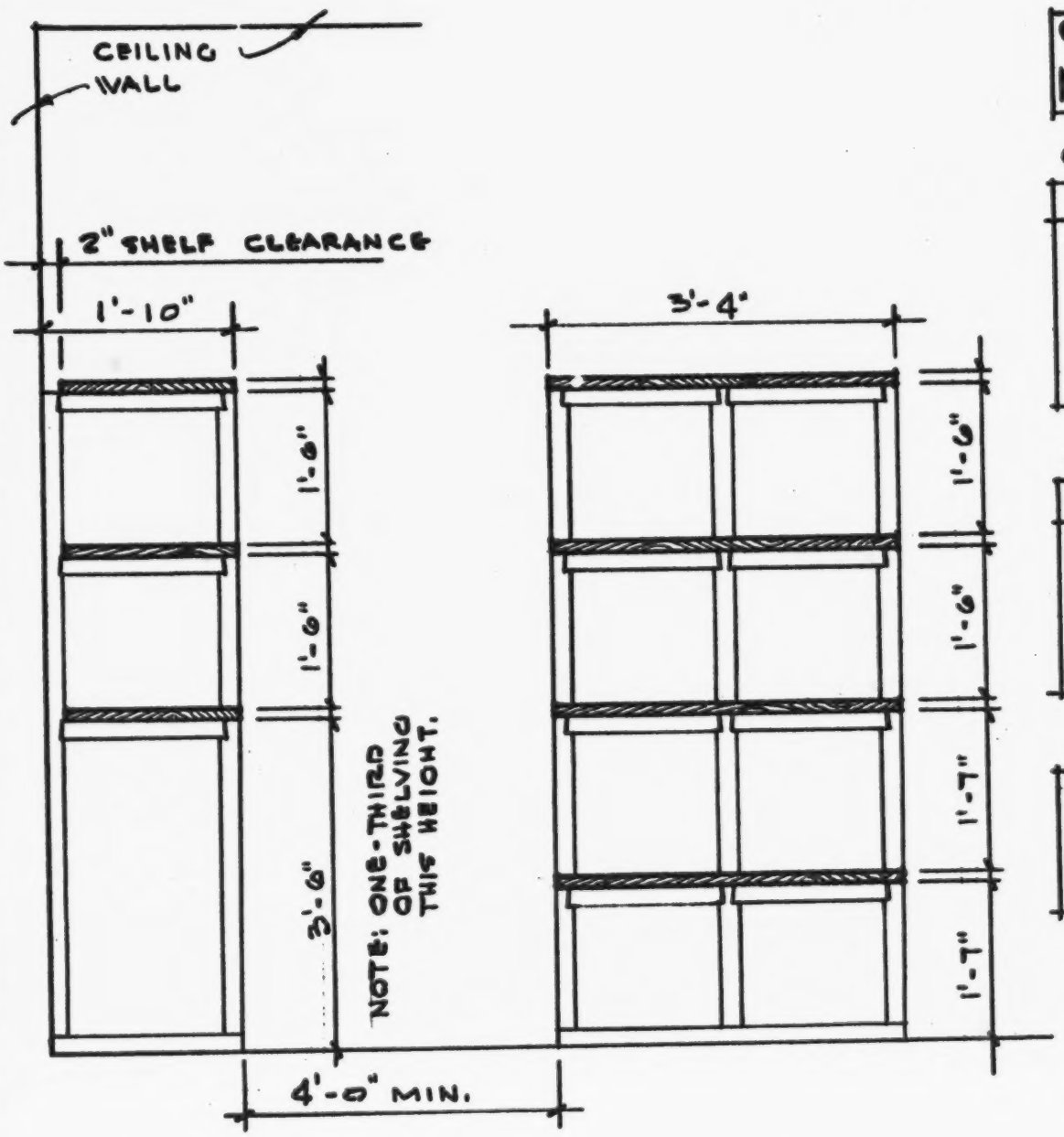
[16]Sanitary Code of Florida 170C-16.04 (9)

Shelves

Shelves should be made of substantial materials. Aisles between shelves should be a minimum width of 4 feet. Movable, adjustable shelves are preferred. If they are fixed, certain optimum dimensions should be observed.



SHELVING SUGGESTED ARRANGEMENT

FIGURE 16

CAN & CARTON MEASUREMENTS

CAN SIZES

NO.	DIA.	HGT.
2	3½"	5"
2½	4"	5"
3	4¼"	7½"
10	6¼"	7½"

CASE SIZES

NO.	NO/CS	DIM. OF CASE
2	24	14½x11 x 10¼
2½	24	16½x12½x 10¼
3	12	17½x13⅜ x 7⅜
10	6	19¼x13 x 7⅜

GALLON JARS

8½" DIAMETER
WIDE MOUTH - 10½" HIGH
JUGS - 12" HIGH

Single or double width shelves in finger arrangement from the wall may be the most efficient use of the space. Shelves should be slatted and placed two inches away from the wall to allow air circulation.

Storage Containers

Space should be provided for large storage containers on dollies. These are approximately 18" diameter and 40" high. Vertical clearance should be provided under some of the shelving for the containers.

Storage Racks or Skids

Portable platforms are recommended for storing cases, bags, drums, etc. off the floor. These provide mobility and better air circulation. Floor space should be allowed for these racks.

Ventilation

Positive store room ventilation is necessary. Four air changes per hour are recommended. Screened louvers located for good circulation may be used in conjunction with a gravity roof ventilator. Screened louvers should not be used where blowing sand or dirt is a problem.

Air conditioning is sometimes used to achieve the 40° - 70° F temperature recommended for dry food storage. This may be a means of relieving refrigerated storage.

Store rooms should be kept free of electric distribution panels, uninsulated pipes, water heaters, refrigerator condensing units or other heat producing devices. Any wall between a store room and a boiler room should be insulated.

Security

Positive security must be provided. Store room locks should be keyed separately from the master system.

EMPLOYEES LOUNGE

The Sanitary Code of Florida requires that "adequate facilities shall be provided for the orderly storage of employees' clothing and personal belongings... ... Such rooms or areas shall be located outside the food storage, preparation and serving areas."[17] This area should include a hanging rod for street clothes and uniforms, small individual lockers for personal property, first aid cabinet, chairs or bench, mirror, lavatory with soap dispenser and towel holder. .... "lavatories shall also be located within food preparation areas."[18]

"Each food service establishment shall be provided with adequate and conveniently located toilet facilities. ..... Toilet rooms shall be well lighted and adequately ventilated. ..... Toilet rooms shall be completely enclosed and shall have tight-fitting, self-closing doors.....(they) shall not open directly into food preparation and serving areas."[19]

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[17]Sanitary Code of Florida 170C-16.08 (5)
[18]Ibid. 170C-16.07 (6)
[19]Ibid. 170C-16.07 (5)

STORAGE SPACE FOR CLEANING SUPPLIES

Separate storage for cleaning supplies, detergents, mop buckets and brooms should be provided. This area should include a service sink, shelving, and some free floor space for bulk supplies on skids or dollies. Some means of ventilation should be provided.

RECEIVING AREA

The amount of space needed for receiving depends on the size and frequency of deliveries. Weighing of foods as they are received is of prime importance therefore, platform scales are essential. These may be automatic indicating or beam-type, preferably built into the floor to expedite the handling of deliveries. A stand-up desk or shelf is needed for checking invoices.

LOADING PLATFORM

The loading platform should be the same level as the kitchen floor. Masonry construction is recommended. For large schools, deliveries are facilitated by an elevated truck loading platform. The roof of this area should be high enough to permit truck traffic. A service drive and turning area should be provided. The maneuvering area should be separated from student activity areas and large enough to accommodate service vehicles. Septic tanks and gas installations should not be located within the service area.

REFUSE AREA[20]

Provision should be made to hide garbage cans from view. This need not be a completely enclosed part of the building; however, a positive protection against insects and animals should be provided. The refuse area should be convenient to the dishwashing and pick-up service area.

Space should be allowed for storage of garbage cans, baskets, crates, cartons, tin cans, milk bottles, and in some cases trash from the entire school. A permanent rack for mops and a drying line or rack for cleaning cloths should be provided.

A facility for washing garbage cans is necessary. (Figure 17, page 35.)

CENTRAL KITCHENS

Authorities are not entirely agreed on the merits of centralized versus individual school preparation. On the one hand, a central kitchen supplying a large geographic area is not feasible, nor can duplicate facilities (e.g. a junior high and elementary school) on the same site, be justified. A consideration of the advantages and disadvantages is in order:

Advantages:

- Economy in building and equipment.

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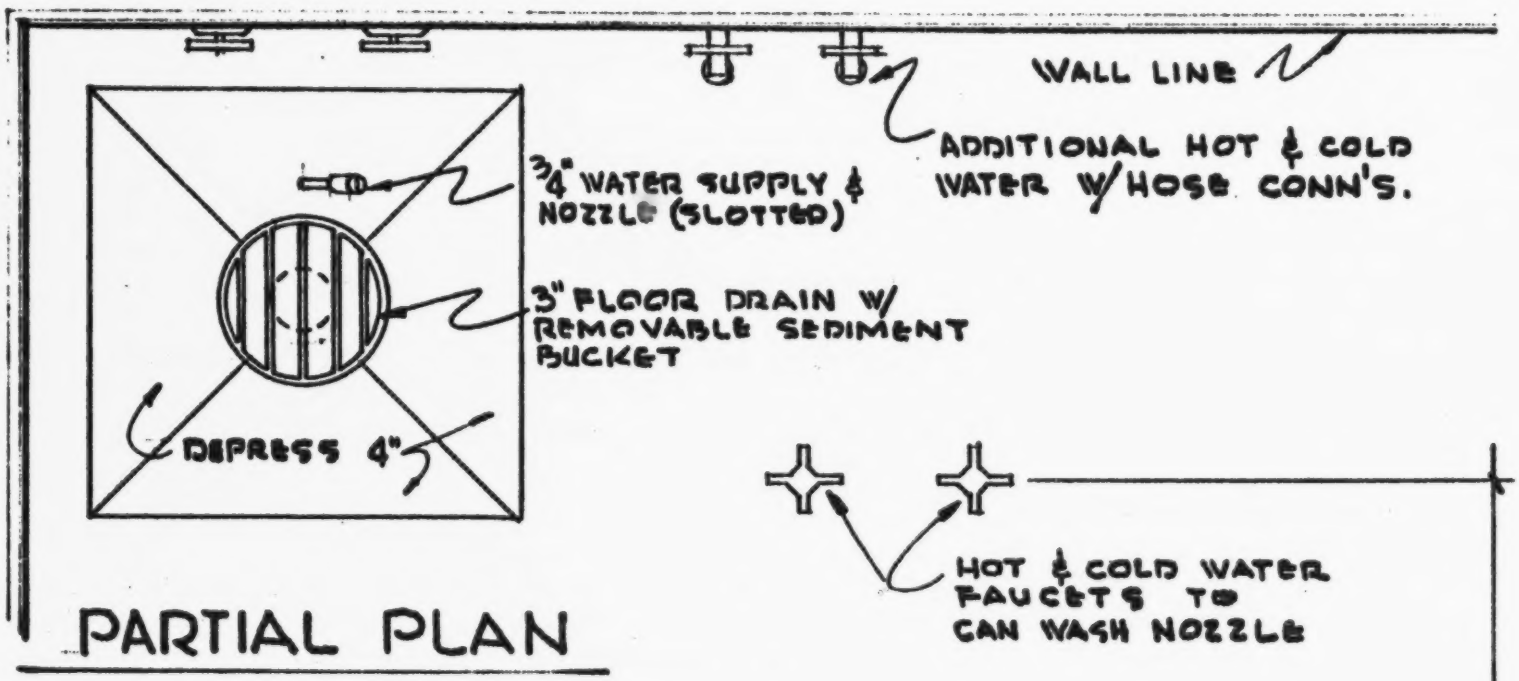
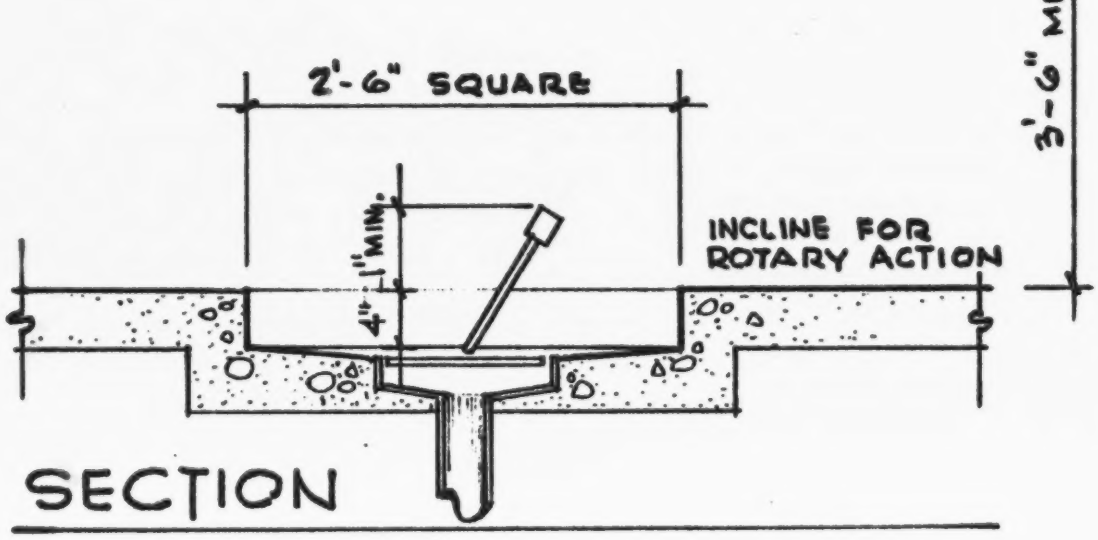
[20]Sanitary Code of Florida 170C-16.07 (7)


WALL LINE
ADDITIONAL HOT & COLD WATER W/ HOSE CONN'S.
3/4" WATER SUPPLY & NOZZLE (SLOTTED)
3" FLOOR DRAIN W/ REMOVABLE SEDIMENT BUCKET
DEPRESS 4"
HOT & COLD WATER FAUCETS TO CAN WASH NOZZLE
PARTIAL PLAN



CAN WASH DETAILS

FIGURE 17

- Economy in buying.
- Economy and greater efficiency in management.
- Economy in labor. The preparation cost per meal normally varies inversely with the number of meals prepared. This is only a part of the total labor cost, however.

Disadvantages:

- A certain amount of individual school initiative is lost.
- Menu items are limited to those which transport and hold well.
- Transportation and serving costs may outweigh other economies.
- There is less flexibility with changes of attendance.
- There may be greater waste of prepared food.
- The quality of food generally deteriorates with the delay between preparation and serving. The longer the delay, the greater may be deterioration in flavor, appearance and nutritive value.
- Traffic uncertainties enroute.

Building Adaptations

Space in addition to that normally provided is needed for storing, loading and cleaning portable or mobile food containers. The dimensions of the space would depend on the size of the containers. If the equipment used to transport the food is heated or refrigerated, plug-ins should be provided in this area.

The truck loading platform must be large enough for the scope of this activity. There should be no difference in elevation between truck loading and food preparation. Doors should be wide enough for the equipment used. The loading area should be roofed for inclement weather.

SATELLITE SCHOOLS

The same conditions necessary for loading food carts at the central kitchen should prevail for unloading at the serving school. Parking space should be included for mobile equipment and plug-ins where necessary. These are the additional essentials for this type of service:

- Dishwashing facilities.
- Storage space for paper goods and cleaning supplies.
- Refrigerator for holding salads, cold desserts, butter, etc.
- Serving equipment, including milk box. In some cases the same mobile units are used to transport and serve the food.

- Manager's desk for the necessary accounting procedures.
- Employees' lounge.
- Garbage collection and can-washing area.

CLASSROOM SERVICE

In some areas, in an effort toward economy, dining room space is eliminated and food is consumed in the classroom. It may be served in the vicinity of the kitchen, or transported by mobile cart and served in the classroom. The disadvantage is sanitation. This method is not recommended beyond elementary grades.

JUNIOR COLLEGES

Junior college food service is usually included in the student center. Flexibility is important so that the area may be used for large or small groups, banquets, meetings, dances and other functions.

Dining Area

In general, food service should be planned to accommodate 75% of the full time students. Dining room space could reasonably be used three times in the course of the noon meal. The size allocation therefore becomes a minimum of 25% of the anticipated enrollemnt times 15 sq. ft. per dining room seat. The service is usually continuous over an extended lunch hour. Breakfast and evening meals are also made available in many junior colleges. Dining space should be planned for the future possibility of expanding the space as the enrollment increases.

Kitchen

The kitchen should be planned so that it may be closed off entirely from the dining room. The estimated per meal load would be 75% of the ultimate day enrollment. It is necessary to provide space in original planning for equipment which will be needed ultimately.

In general, the same criteria apply to the design of junior colleges and high schools. The exceptions are an increase in dry storage and refrigeration in keeping with the demands of 3 meals a day. Dry storage may be calculated at 1/4 to 1/2 sq. ft. per meal per day, refrigerated storage at approximately 1/6 cu. ft. per meal per day.

Serving Area

A cafeteria arrangement is the most practical service solution. It adapts well to table service when necessary. The serving counter may be included as part of the kitchen for economy of space, labor and materials. This is also conducive to good kitchen sanitation.

Snack Bar

A snack bar may be provided for "drop-in" trade for quick counter service. It is a useful adjunct for serving party refreshments when the entire kitchen and serving area need not be used. This area should be convenient to the kitchen for deliveries, refrigeration and storage, but separated from it so that the kitchen and snack bar may be opened and closed independently.

SPECIAL USES

Kitchen facilities frequently serve purposes other than the preparation and serving of a noon meal to regular students. Some of these are:

Emergency Feeding

In many cases schools will be used by the community for emergency feeding and housing in natural disasters.

Any school with Civil Defense approved fallout facilities will be issued two weeks' food supplies and water containers for the number of people authorized for the shelter. This should be taken into consideration in planning the school lunch storage facilities.

Head Start, Day Camps, Summer Enrichment

School lunch facilities are sometimes used on a limited scale for special programs involving a smaller number of children than the regular program. The summer educational enrichment program may entail handling packed lunches brought from home, providing milk, serving a regular lunch, preparing food for field trips or to be transported to a day camp.

Vocational Education

Quantity food service may be taught during and after school hours, using school lunch facilities for the laboratory training. The major adaptation in this case is to allow sufficient space to accommodate 15 to 20 additional people.

RECOMMENDED ADDITIONAL READING

Kotschevar, L. H., and Terrell, Margaret E. FOOD SERVICE PLANNING: LAYOUT AND EQUIPMENT. New York: John Wiley and Sons, Inc., 1961.

EQUIPMENT RECOMMENDATIONS AND APPROXIMATE SIZES*

Item	Number of meals served			
	Up to 300	300 - 600	600 - 1000	1000 - 2000
RANGES, ETC.				
Range	1 heavy duty, solid top 34" x 35" or 42", oven and additional rack (not needed if steam equipment is provided).	1 heavy duty, solid top 34" x 35" or 42" (not needed if steam equipment is provided).	1 heavy duty, solid top 34" x 35" or 42" (not needed if steam equipment is provided).	
Expando Unit	May be provided where half of a range is needed for limited surface cooking in conjunction with steam equipment.			
Oven	2 - 4 bun pan capacity (18" x 26" pans). Oven 32" x 36".	4 - 6 bun pan capacity (18" x 26" pans). Convection ovens 32"-45" x 36"-45", Conventional ovens 60" x 38".	6 - 8 bun pan capacity (18" x 26" pans). 1 or 2 ovens. Convection ovens, 32"-45"x36"-45" Conventional ovens 60" x 38".	12-16 bun pan capacity (18" x 26" pans). Two ovens. Convection ovens, 32"-45"x 36"-45" Conventional ovens 60" x 38".
Steam Cookers	1 small steam cooker. 18" x 32".	1 small steam cooker, 18" x 32", one or two compartments.	1 steam cooker, 32" - 44" x 34", two or three compartments.	1 or 2 regular steam cookers (wide enough for two 12" x 20" pans), 44" x 34", two or three compartments.
Steam Jacketed Kettle	30-gallon kettle, desirable in the upper range, 30" diameter.	40-gallon, 32" diameter.	1 or 2 40 to 60 gallon, 32" - 36" diameter.	2 to 4 40 to 80 gallon, 32" - 40" diameter.
Hood or Ventilator	Should be provided over the cooking unit (page 25).			

* Where dimensions are given, the first figure represents the approximate dimension from side to side, the second figure from front to back. See templates at back of this bulletin.

Item	Number of meals served			
	Up to 300	300 - 600	600 - 1000	1000 - 2000
<u>SINKS, ETC.</u> Dishwashing	If dishmachine is not provided, 3 or 4 compartment sink, each compartment 20"x20"x14" with metal dish tables attached (page 29), overflow drains, mixing faucets, drain fitted with perforated metal strainer baskets.			
Garbage Disposal Units	May be provided in the food preparation and/or dishwashing area (page 28).			
Pre-Rinse	Needed for all dishwashing arrangements (page 28).			
Pot Sink	3-compartment vegetable and pot sink, 35"-38" high, compartments 28"-30" x 24"x14", 1 or 2 drainboards.	3-compartment pot sink, 35"-38" high, compartments 28"-30" x 24" x 14", 1 or 2 drainboards (page 24).	3-compartment pot sink, 35"-38" high, compartments 28"-30" x 24" x 14", 1 or 2 drainboards (page 24).	3-compartment pot sink, 35"-38" high, compartments 28"-30" x 24" x 14", 1 or 2 drainboards (page 24).
Vegetable Sink		2-compartment vegetable sink, each compartment 24" x 24" x 12" with at least 1 drainboard 24" or longer x 24".	2-compartment vegetable sink, each compartment 24" x 24" x 12" with at least 1 drainboard 24" or longer x 24".	2-compartment vegetable sink, each compartment 24" x 24" x 12" with at least 1 drainboard 24" or longer x 24".
Cook's Sink	A sink 15" x 15" x 10" in the cook's table is desirable where water is not readily accessible to the cooking area.			

<table>
<tr><th rowspan="2">Item</th><th colspan="4">Number of meals served</th></tr>
<tr><th>Up to 300</th><th>300 - 600</th><th>600 - 1000</th><th>1000 - 2000</th></tr>
<tr><td>Pot Filler</td><td colspan="4">A swing faucet or a flexible attachment to supply water for the steam-jacketed kettles and stock pots used on range, is a convenience. This should provide hot water and be about 18" clear above the range top.</td></tr>
<tr><td>Hand Lavatory</td><td colspan="4">Required unless the service sink is located where it may be used for handwashing purposes. [Sanitary Code of Florida 170C-16.07 (6)]</td></tr>
<tr><td>Service Sink</td><td colspan="4">Desirable, or the garbage can washing facilities may be used for service sink purposes.</td></tr>
<tr><td><u>DISH MACHINES</u></td><td>Single tank, door type, 30" x 27" in place of the 3-compartment sink desirable. Installation of dish machine must assure an adequate hot water supply.</td><td>Single tank, automatic rack conveyor type, 48" x 30", with recirculating scrapper 66" x 30". Installation must assure an adequate hot water supply.</td><td>Single tank, automatic rack conveyor type, 48" x 30", with recirculating scrapper 66" x 30". Installation must assure an adequate hot water supply.</td><td>Double tank, automatic rack conveyor type, 66" x 30", with recirculating scrapper 86" x 30", or flight type continuous racking conveyor 12' long, (clean dish table not needed). Installation must assure an adequate hot water supply.</td></tr>
<tr><td colspan="4"><u>NOTE</u>: Where flow pressure of rinse water line exceeds 25 lbs., a flow control valve or a pressure reducing valve should be installed. 20 lb. flow pressure is suggested as the ideal operating pressure.</td></tr>
<tr><td><u>REFRIGERATOR</u></td><td>50 cu. ft.</td><td>50 - 100 cu. ft.</td><td>100 - 175 cu. ft.</td><td>175 - 350 cu. ft.</td></tr>
<tr><td colspan="4">1/3 to 1/6 cu. ft. net capacity per meal needed, depending on deliveries and commodities. This is in addition to freezer space and milk refrigeration. When more than 60 cu. ft. of refrigeration is needed, consideration may be given to providing a walk-in refrigerator in addition to one or more reach-ins (page 21).
To figure space required for reach-in refrigerators, allow 34" front to back, roughly 30" outside width for each 20 cu. ft. of interior capacity.</td></tr>
<tr><td>Milk Refrigeration</td><td colspan="4">Milk refrigeration, preferably in the serving line, should be provided in addition to regular refrigeration, at approximately 1 cu. ft. for 50 half-pints.</td></tr>
</table>

Item	Number of meals served			
	Up to 300	300 - 600	600 - 1000	1000 - 2000
FREEZER	May be supplied as needed in 20-60 cu. ft. capacity units. Upright type uses less floor space than chest type, food more accessible, 42" - 80" x 34".			
TABLES	A general rule on work table space is to provide 4 linear feet for each food production employee. Adjustable legs for raising or lowering table height are recommended. Stainless steel top preferred.			
Receiving Table	May be provided near receiving entrance or in store room, to handle incoming goods, 4' - 6' long x 30" wide.			
Cook's Table	6' - 8' x 30", 34" - 36" high; may have utensil rack over, shelf under and two drawers.	6' - 8' x 30", 34" - 36" high, may have utensil rack over, shelf under and two drawers.	Two 6' - 8' x 30", 34"-36" high; may have utensil rack over, shelf under and two drawers. (May have 15"x15"x10" sink installed in it.)	Two 6' - 8' x 30", 34"-36" high; may have utensil rack over,shelf under and two drawers. (May have 15" x15"x10" sink installed in it.)
Preparation Table		6'-8'x30", 34"-36" high with shelf under and two drawers.	Two 6'-8' x 30", 34"-36" high with shelf under and two drawers.	Two 6'-8' x 30", 34" - 36" high with shelf under and two drawers.
Baker's Table	6'-8'x30", 34"-36" high. Base open for storing mobile bins.	6'-8'x30", 34"-36" high. Base open for storing mobile bins.	6'-8'x30", 34"-36" high. Base open for storing mobile bins.	Two 6'-8'x30", 34"-36" high. Base open for storing mobile bins.
Soiled Dish Table	8' x 24" - 30" with scrap holes as needed.	10" x 24" - 30" with scrap holes as needed.	12' x 24" - 30" with scrap holes as needed.	14' x 24" - 30" with scrap holes as needed.
	For more information on arrangement see pages 8, 9, 10, 28, 29.			
Clean Dish Table	8' x 24" - 30"	10' x 24" - 30"	12' x 24" - 30"	14' x 24" - 30" (not needed with 'flight type)
	Ample space needed for air-drying of dishes in dishmachine racks. Drying operation is speeded by adequate hot water supply and the use of a rinse injector. If a rinse injector is used, it is possible to cut down slightly on the length of clean dish table.			

Item	Number of meals served			
	Up to 300	300 - 600	600 - 1000	1000 - 2000
MOBILE ITEMS	Floor space should be planned for parking these items at the point of greatest use.			
Utility Trucks (Heavy duty)	Useful for transporting raw and prepared food, soiled and clean dishes. Number determined by local needs, 24" x 40" with two shelves, 500# capacity.			
Mobile Tables	2' x 4', same height as range and serving counter. Useful in conjunction with range, oven, steam equipment, mixer, slicer, and for transportation within the kitchen or to serving counter.			
Cooling Racks	Useful in all departments. Number determined by storage and work space, 27" deep, in multiples of 21".			
Utensil Racks	For transporting and storing pots and pans, 48" - 60" x 26".			
Dollies	Useful in all departments for milk crates, food storage cans and garbage cans.			
SERVING COUNTER	16' - 20' long x 24" - 30" wide including refrigerated milk service, dish storage under counter	16' - 20' long x 24"-30" wide including refrigerated milk service, dish storage under counter.	16' - 20' long x 24"-30" wide including refrigerated milk service, dish storage under counter.	16' - 20' long x 24" - 30" wide including refrigerated milk service, dish storage under counter.
	Serving counters may be mobile units. Number of counters depends on dining room size. In general, one counter is needed for every 200 - 250 dining room seats.			
Dish Trucks	Mobile dish trucks may be used under serving counter in place of fixed shelving. These are loaded in the dishwashing area and used at the serving counter without rehandling of dishes.			
Sneeze Guard	Required by Sanitary Code of Florida (pages 15 and 16).			

Item	Number of meals served			
	Up to 300	300 - 600	600 - 1000	1000 - 2000
Tray Rail	Length of counter and 12" wide may be provided. Closed type with inverted V-ridges preferred.			
KITCHEN MACHINES Mixer	20-30 qt. 24" x 32" - 38" with extra bowl.	20 - 30 qt. 24" x 32" - 38" with 2 extra bowls.	Two 30 qt. with extra bowl: O R One 60 qt. with dolly with 30 qt. adapter bowl and beater.	30 qt. with 2 extra bowls: 60 qt. with 2 extra bowls.
Mixer Attachments	Chopper, shredder, slicer and grater attachments for all mixers above.			
Cutter/ Mixer			May be used in lieu of the second mixer and the food cutter. See template in back of this bulletin for dimensions.	
Peeler	Needed where fresh root or tuberous vegetables are used:			
Slicer	18" x 26"	18" x 26"	18" x 26"	18" x 26"
Food Cutter (Revolving knives and bowl)			Desirable, 28" x 24"	38" x 24"
Vegetable Cutter and Slicer (Hopper type)		Desirable	Desirable	36" x 24"
WATER HEATER	Page 30 and Appendix, page 48 .			

Item	Number of meals served			
	Up to 300	300 - 600	600 - 1000	1000 - 2000
MISCELLANEOUS ITEMS Bulletin Board	Approximately 2' x 4' for posting menus, work schedules, miscellaneous notices, health cards and sanitation reports.			
Clock	Installed for best visibility.			
Fire Extinguisher	Carbon dioxide 5-15# size, 1 or 2.	Carbon dioxide 5-15# size, 2.	Carbon dioxide 5-15# size, 2 or 3.	Carbon dioxide 5-15# size, 3 or 4.
Soap Dispenser Toilet Paper Holder Towel Dispenser	Should be selected in collaboration with local authority, and appropriate for the type used.			
Scales	Platform type needed in every receiving area. Baker's scales needed in preparation area.			
SPECIAL AREAS Storage for Cleaning Supplies	Separate storage space needed for dry mops, brooms, buckets, cleaning compounds, etc. This should be well ventilated and include a mop rack and shelves for cleaning supplies.			

Item	Number of meals served			
	Up to 300	300 - 600	600 - 1000	1000 - 2000
Office Space	Every department should have at least a desk, a chair, and file drawer. For departments serving 500 or more, separate office space is desirable.			
Lounge	Lavatory, toilet and locker facilities for employees. Should include space for one or two chairs, dressing table and mirror, first aid cabinet, hanging rod for clothing, individual lockers for purses and small objects.			
Garbage Can Washing Area	Needed for all departments. Floor should be same level as kitchen (page 34). Hot and cold water connections and floor drain within a depressed section.			
DINING ROOM				
Tables	A variety in size and shape of tables avoids a regimented regular pattern. Eight is regarded as the maximum number to seat at one table; 29" is a suitable height.			
Chairs	One per person for largest service period; 17" is suggested as a suitable seat height for all age groups. Sturdy construction, light in weight, saddle seat, no slats in back. No cross bars in reach of feet. Top of back not more than 2" above height of table.			
Water Cooler	1	1 or 2	2	2
	These may have an extra fountain on the side, for small children.			
Display Area	Desirable in every dining room for student art work, menus, seasonal decorations and educational materials.			

SUMMARY OF MECHANICAL SERVICES FOR SCHOOL LUNCH EQUIPMENT*

Item	Drainage			Water			Fuel		
	Direct	In-direct	Through grease trap	140° F.	180° F.	Cold	Electric motor	Gas	Electricity
Kitchen Area:									
Oven								X or	X
Oven, convection							X	X or	X
Range								X or	X
Steam jacketed kettle			X	X	or	X		X or	X
Steam Cooker			X	X	or	X		X or	X
Drip pan or floor depression			X						
Cutter or chopper							X		
Mixer							X		
Vegetable peeler	X	or X				X	X		
Slicer							X		
Frozen food cabinet							X		
Reach-in refrigerator		X					X		
Walk-in refrigerator		X					X		
Cook's sink	X			X		X			
Hand lavatory	X			X		X			
Pot sink			X	X	X	X		X or	X
Vegetable sink	X			X		X			
Serving Area:									
Heated unit		X		X				X or	X
Refrigerated unit		X					X		
Milk cooler		X					X		
Milk dispenser		X					X		
Dishwashing Area:									
Prewash unit			X	X		X	X		
Food waste disposer	X					X	X		
Dishwashing machine			X	X	X		X	X or	X
Dishwashing sink			X	X	X	X		X or	X

*Adapted from "A Guide for Planning and Equipping School Lunchrooms", USDA, PA-292

DISHWASHING AND HOT WATER REQUIREMENTS*

SCHOOL LUNCH DEPARTMENTS

Meals Served	Gal. 140° water per student average	Total Gal. 140° water	Total racks soiled dishes (see 1.)	Total Gal. 180° rinse required (see 2.)	Hot water required in 2-hour peak demand(see 3.)	
					Gal. 140°	Gal. 140° to boost to 180°
Up to 300	1.5	450	60	110	250	110
300 to 600	1.5	900	120	240	495	240
600 to 1000	1.2	1200	200	400	660	400
1000 to 2000	1.0	2000	400	640	1100	640

1. Based on one rack soiled dishes for five students.

2. Based on dishwashing machine rinse requirements at 20 pounds pressure.

   Up to 300 meals - door type, 1.8 gallons rinse water per rack.

   300 - 1000 meals - single tank, rack conveyor type, 2 gallons rinse water per rack.

   1000 - 2000 meals - double tank, rack conveyor type or flight type, 1.6 gallons rinse water per rack.

3. Two hour peak: 55% of total 140° water and all of 180° water used.

4. Hard water will quickly result in a decrease of capacity. Water softeners recommended.

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* Information supplied by Florida Power and Light Company.

SANITATION CHECK LIST*

- Adequate handwashing facilities located in the kitchen as well as in the employees lounge. 170C-16.07 (6).
- Adequate water of at least 170° F. for sanitizing dishes and utensils. 170C-16.06 (m) 1.
- Sink compartments large enough to accommodate utensils to be washed.
- Dish machine flow pressure not less than 15 nor more than 25 pounds per square inch on the water line at the machine and not less than 10 pounds per square inch at the rinse nozzles. 170C-16.06 (5) 3.(b) 1.
- Adequate refrigeration (40° F. or below): adequate frozen storage (0° F. or below). 170C-16.04 (2).
- Placement of equipment with space for proper cleaning and maintenance. (Equipment Placement, page 18.) 170C-16.06 (3)
- Sinks, dishtables and shelving installed 2" - 4" away from the wall to permit cleaning properly behind the splash backs or shelving.
- All outside openings protected by screens or controlled air currents. 170C-16.07 (8).
- Use of impervious, durable, non-toxic, non-corrosive materials for equipment and multi-use utensils. 170C-16.06 (2).
- Stationary equipment elevated at least 6" to permit cleaning under it. 170C-16.06 (3).
- Equipment on casters where feasible.
- A minimum of horizontal pipes.
- Accessibility of cleaning equipment. 170C-16.08 (6).
- Efficient food waste disposal. 170C-16.07 (7).
- Food-grinders provided with not less than a 2" waste line. Each food-grinder connected and trapped separately from any other fixture.
- Hose bibb and floor drains in kitchen for hosing the floor. 170C-16.08 (1).
- Adequate drainage properly placed.
- Hose bibbs in other strategic spots such as the cold water line of peelers, the hot water line of dishwashers for flushing out machines.
- Adequate grease trap properly placed. 170C-31.05 (4).

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*References are to the Sanitary Code of Florida.

- Adequate lighting. 170C-16.08 (3).
- Adequate ventilation including local exhaust ventilation over all cooking units. 170C-16.08 (4).
- Filters readily removable for cleaning. 170C-16.08 (4).
- Serving counter protected against contamination from students. 170C-16.06 (1) (f).
- Toilet facilities provided for employees. 170C-16.07 (5).
- Toilet rooms completely enclosed and having self-closing doors. 170C-16.07 (5).
- Floors smooth, durable, non-absorbent and easily cleanable. 170C-16.08 (1).
- Conformance with all other county health department requirements affecting food service.

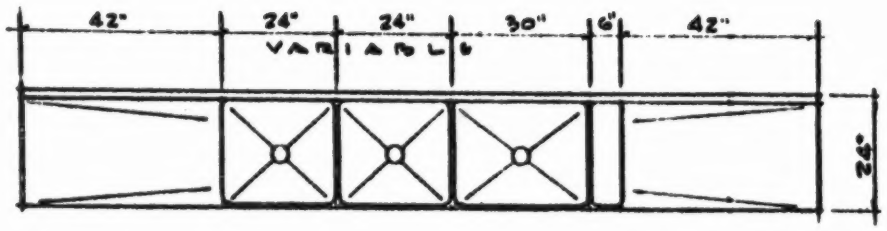
SAFETY CHECK LIST

- Proper grounding of all electrical outlets.
- Dish machines and other switches located away from source of moisture, but within comfortable reach of workers.
- Electrical switches located so that they can be reached readily in the event of an emergency.
- Enclosed motors for power equipment.
- Safety features on equipment such as guards on slicing machines, safety latches on walk-in refrigerators, counter-sunk handles on cabinets, rounded corners, temperature controls.
- Fans properly guarded.
- Accessible fire extinguishers.
- To avoid accidental scalding, 180° water service to the rinse line of the dishwasher and the rinse compartment of the pot sink only.
- Work surface 34" - 36" high to prevent unnecessary strains and fatigue. Adjustable height is preferred.
- Equipment of a size which women can handle easily.
- Slip-proof floors.
- Traffic flow such that students or employees do not collide while carrying trays.
- Exterior doors opening outward.
- Accessible and complete first aid kit.

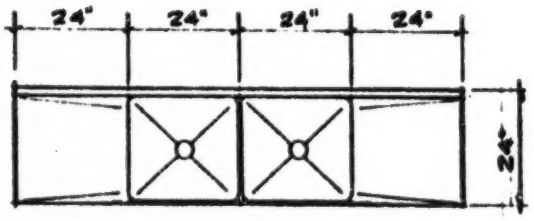
SPACE ENVIRONMENT AND EQUIPMENT FOR SCHOOL LUNCH PURPOSES

	ELEMENTARY	JUNIOR HIGH	SENIOR HIGH
SCHOOL LUNCH PARTICIPATION PER ENROLLMENT:	80%	60%	60%
SERVING RATE PER MINUTE/SERVING COUNTER: (THREE 30 MINUTE SHIFTS)	10/1	10/1	10/1
DINING ROOM SEATING CAPACITY: ACCOMODATE AT LEAST 1/3 OF THE ULTIMATE ENROLLMENT			
PROVIDE 10 SQUARE FEET PER SEAT			

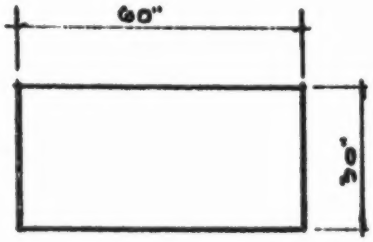
SPACE	SPACE PERCENTAGE	LIGHTING	VENTILATION	FINISHES	ACOUSTICS	PLUMBING	EQUIPMENT
DINING AREA	60	NATURAL AND ARTIFICIAL SBE REGS., 130-2.12(2) 20 FOOT CANDLES AT TASK LEVEL FSC 170C-16.08(3)	NATURAL AND MECHANICAL SBE REGS., 130-2.10 SUMMER: 30 AIR CHANGES/HR. WINTER: 3 AIR CHANGES/HR. FSC 170C-16.08(4) AIR CONDITIONING SBE REGS. SP-7	EASILY CLEANABLE FSC 170C-16.08(1&2)	DESIRABLE FSC 170C-16.08(2) RUBBER OR PLASTIC CHAIR AND TABLE TIPS SOUND TRAPS IN AIR-HANDLING UNITS	DRINKING FOUNTAINS SBE 130-2.18(9)	LIGHTS: IF STAGE IS PROVIDED FLY FANS FSC 170C-16.07(8) WINDOW SCREENS FSC 170C-16.07(8)
KITCHEN PREPARATION DISHWASHING / SCULLERY REFRIGERATED STORAGE	20	NATURAL AND ARTIFICIAL SBE REGS. 130-2.12(1) WINDOWS PREFERABLE TO SKYLIGHTS 20 FOOT CANDLES AT WORK SURFACE FSC 170C-16.08(3)	FREE CIRCULATION OF AIR, CROSS VENTILATION DESIRABLE INTERIOR KITCHENS MECHANICALLY VENTILATED - 4 AIR CHANGERS/HR SBE 130-2.10(4c) FSC 170C-16.08(4) DIRECT EXHAUST FLUE VENT TO EXTERIOR FROM DISHWASHING MACHINE (MORE EFFECTIVE THAN A VENT HOOD) RANGE HOOD FSC 170C-16.08(16) GAS FUELED EQUIPMENT VENTED TO EXTERIOR SBE REGS. 130-2.09(3&4)	FLOORS: IMPERVIOUS AND WASHABLE FSC 170C-16.08(1) WALLS: IMPERVIOUS AND WASHABLE FSC 170C-16.08(2)	DESIRABLE FSC 170C-16.08(2) UNDERCOATING OF FIXED METALLIC SURFACES FOR SOUND DEADENING USE OF HARD RUBBER OR PLASTIC WASHERS OR STRIPS BETWEEN BEARING SURFACES AND AT POINTS OF IMPACT SOUND TRAPS IN AIR-HANDLING UNITS	DRAINAGE: FLOOR DRAINS FOR EQUIPMENT: VEGETABLE PEELER, COOK'S SINK, VEGETABLE SINK AND LAVATORY FSC 170C-7.11(8) GREASETRAP: WITH ON-SITE SEWERAGE FACILITIES FSC 170C-4.061 SUPPLY: 180°F WATER-POT SINK, DISHWASHING MACHINE AND SINK FSC 170C-16.06(582) SUPPLY: 140°F WATER TO PREPARATION AREA: FSC 170C-16.06(582) SUPPLY: COLD WATER FSC 170C-16.07(1)	FLY FANS FSC 170C-16.07(8) SPECIAL WIRING AND OUTLETS (NEC) INDIVIDUAL SWITCHES FOR FANS W/AUTOMATIC SHUTTERS AND BIRD SCREENS EXTERIOR DOOR: 3½' WIDE OR (2) 3' DOORS PLACEMENT OF EQUIPMENT FSC 170C-16.06(3) REFRIGERATION FSC 170C-16.042
SERVING AREA:	7	20 FOOT CANDLES AT WORK SURFACE FSC 170C-16.08 (3)	NATURAL AND MECHANICAL SBE REGS. 130-2.10 FSC 170C-16.08(4)	FLOORS: IMPERVIOUS AND WASHABLE FSC 170C-16.08(1) WALLS: IMPERVIOUS AND WASHABLE FSC 170C-16.08(2)	DESIRABLE FSC 170C-16.08(2)	FLOOR DRAIN FSC 170C-7.11(8)	SNEEZE GUARDS FSC 170C-16.06(1F) SPECIAL WIRING AND OUTLETS (NEC)
OFFICE	1	NATURAL AND ARTIFICIAL SBE REGS. 130-2.12(2) 20 FOOT CANDLES AT TASK LEVEL	NATURAL AND MECHANICAL SBE REGS. 130-2.10		DESIRABLE		SEPARATE SPACE FROM STOREROOM
EMPLOYEES LOUNGE	4	NATURAL AND ARTIFICIAL SBE REGS. 130-2.12	NATURAL AND MECHANICAL SBE REGS. 130-2.10	FLOORS AND WALLS: IMPERVIOUS AND WASHABLE SBE 130-2.18(2) FSC 170C-16.08(1&2)	DESIRABLE	TOILET FACILITIES FSC 170C-16.07(5&6)	LOCKERS OR PERSONAL STORAGE SPACES FSC 170C-16.08(5)
REFUSE AREA	2		FSC 170C-16.08(4)	WASHA? FSC 170C-16.08(1&2) VERMIN-PROOF FSC 170C-16.07(7)		CAN WASH FSC 170C-16.07(7)	FLY FANS FSC 170C-16.07(8)
STORE ROOM	6	NATURAL AND ARTIFICIAL SBE REGS. 130-2.12	POSITIVE VENTILATION REQUIRED 4 AIR CHANGES/HR. SBE REGS. 130-2.10 FSC 170C-16.07(8)				DOORS: 3½' WIDE OR (2) 3' DOORS
STAGE (NOT INCLUDED)		FOOTLIGHTS, CYCLORAMA THROUGH, STAGE LIGHTING, SPOT AND STRIPLIGHTS					VARIABLE CONTROLLED LIGHTING, STAGE CONSOLE, AND DIMMER PANEL SOUND SYSTEM



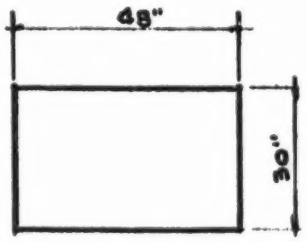
POT SINK AND DRAINBOARDS



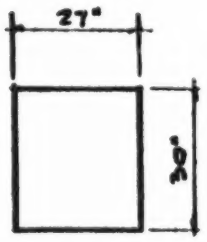
SINK AND DRAINBOARDS



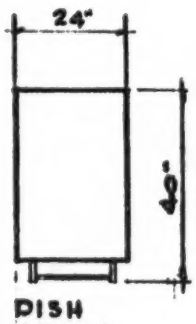
2 TANK CONVEYOR DISH MACHINE



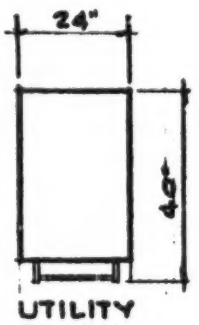
CONVEYOR DISH MACHINE



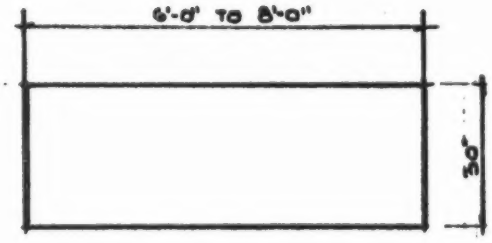
1 TANK DISH MACHINE DOOR TYPE



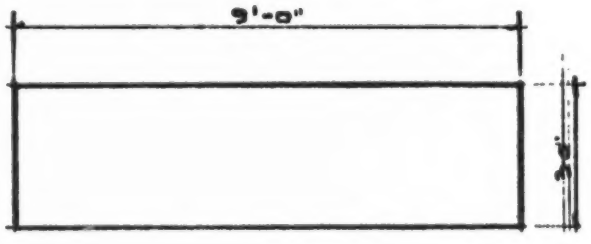
DISH TRUCK



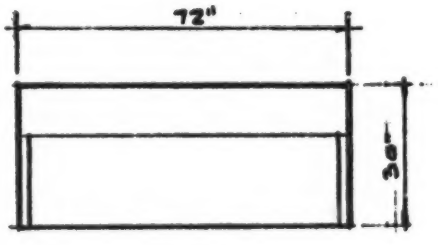
UTILITY TRUCK



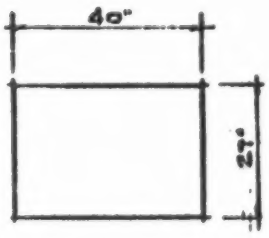
TABLE



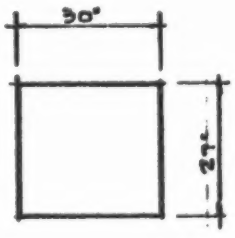
TABLE



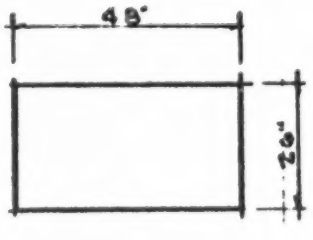
BAKERS TABLE W/ ELEVATED SHELF



PLATFORM TRUCK

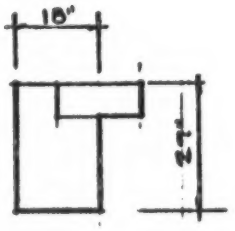


PLATFORM

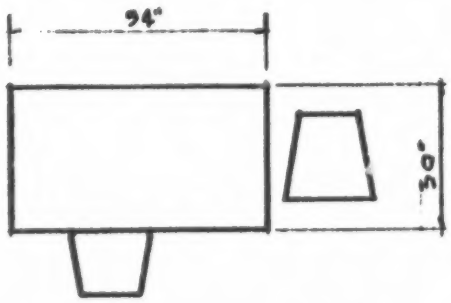


UTENSIL RACK

GARBAGE CAN

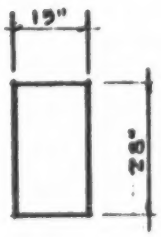


SCALE

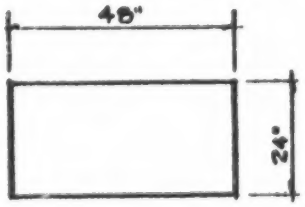


DESK & CHAIR

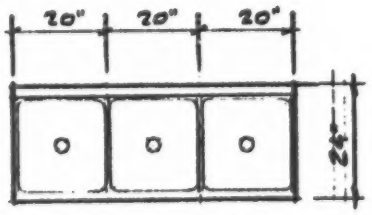
CHAIR



FILE



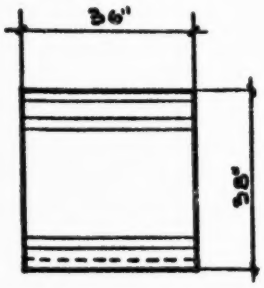
MOBILE TABLE



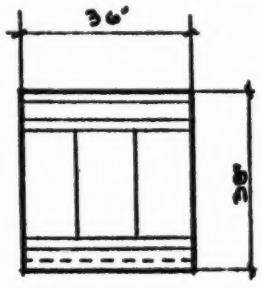
DISH SINK

SCALE RULE: EACH NUMBERED SPACE REPRESENTS ONE FOOT FOR TEMPLATES.

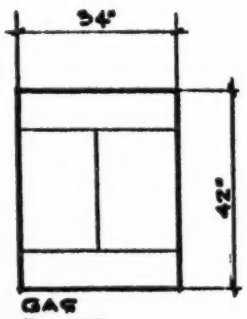
¼" SCALE PLAN VIEW TEMPLATE OF KITCHEN EQUIPMENT



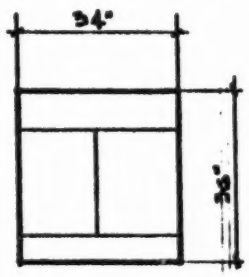
ELEC. RANGE



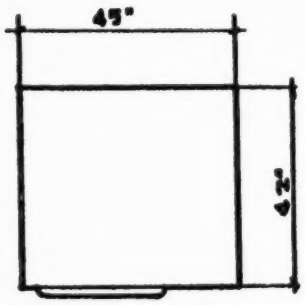
ELEC. RANGE



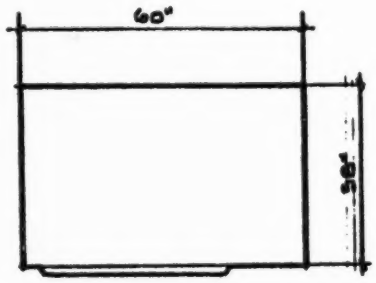
GAS RANGE



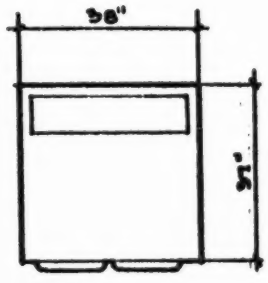
GAS RANGE



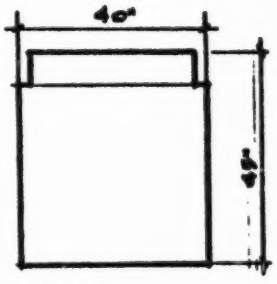
ELEC. OVEN



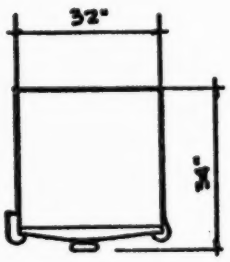
GAS BAKE OVEN
2 PANS/DECK

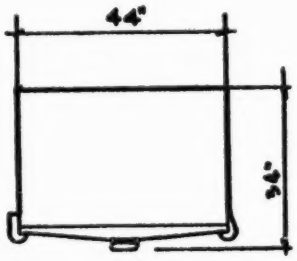


GAS CONVECTION OVEN

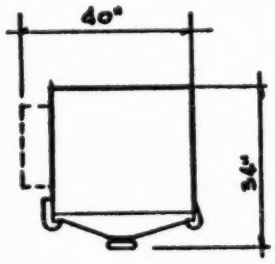


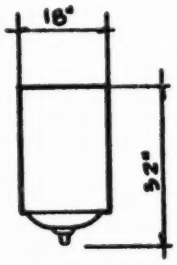
ELEC. CONVECTION OVEN



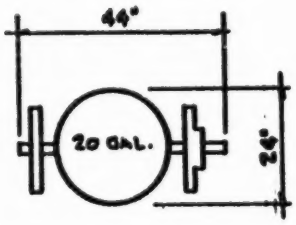


STEAM COOKERS

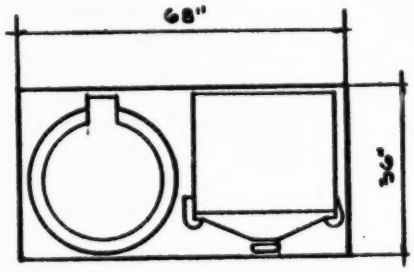




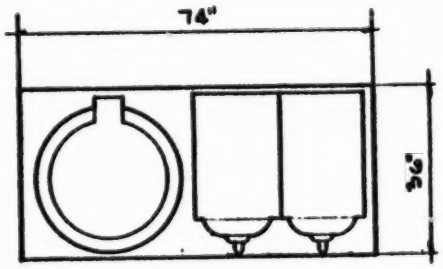
PRESSURE COOKER



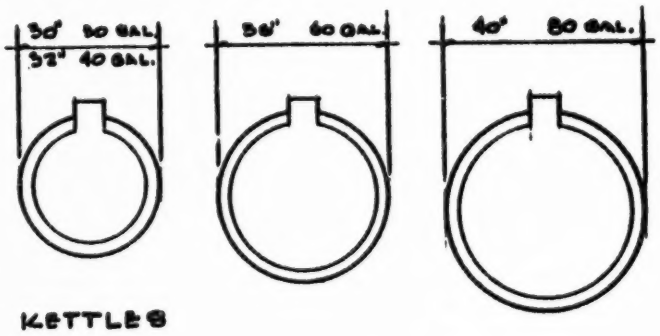
TILTING KETTLE



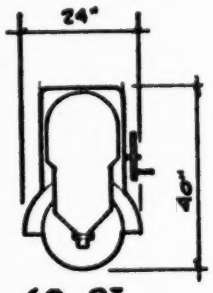
30 OR 40 GAL. KETTLE W/ COOKING COMPARMENT



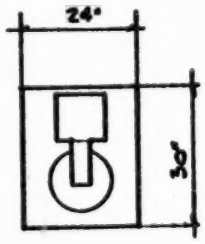
30 OR 40 GAL. KETTLE W/ TWO PRESSURE COOKERS



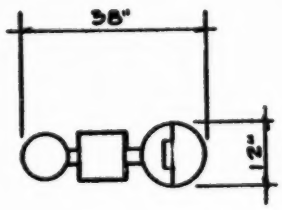
KETTLES



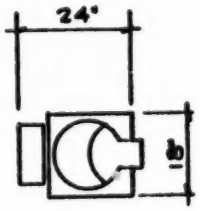
60 QT. MIXER



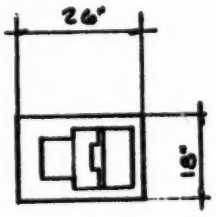
20 QT. MIXER ON MOBILE STAND



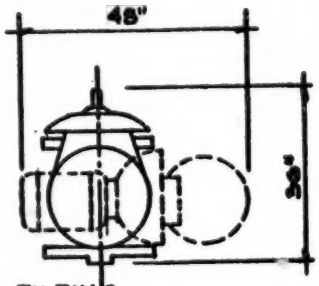
FOOD CUTTER



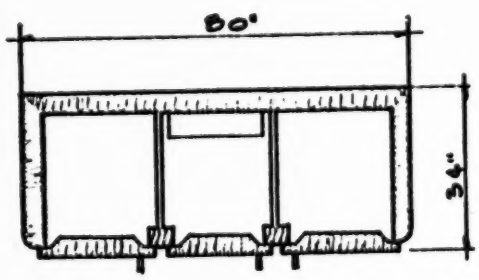
PEELER



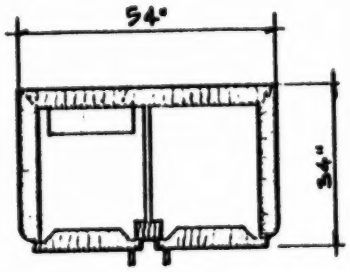
SLICER



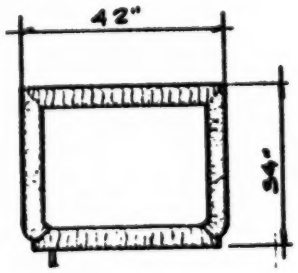
TILTING CUTTER/MIXER



REFRIGERATORS AND FREEZERS
65 CU. FT.



40 CU. FT.



20 CU. FT.